

THE IRON AGE

A Review of the Hardware, Iron, Machine and Trades.

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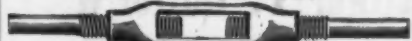
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Advertisement on page 14.

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THE IRON AGE

New York, Thursday, November 30, 1905.

The Hampton Water Hoist.

The removing of water from mines is always a serious problem, especially when the water is highly impregnated with acids and the amount to be removed is excessive. In the anthracite regions there are mines in which for every ton of coal raised as much as 14 tons of water must be pumped and probably at no other place have a greater variety of pumps and lifting devices been tried. Up to the present the most satisfactory means for handling large quantities of water at comparatively low heads have proved to be large bailers operated by steam engines, although they lack the mechanical regularity inherent in a pump, as they are necessarily operated by men. At the Hampton mines, near Scranton, Pa., the Delaware, Lackawanna & Western Railroad Company has a water hoisting equipment designed by the company's electrical engineer, H. M. Warren, which possesses

ute the power required was found to be approximately 800 horse-power. An alternating current motor of that capacity was specified and there immediately arose the difficulty of starting, stopping and reversing so large a motor. It was decided that it would be impracticable to have the motor run other than continuously in one direction, as it is well known that the amount of current required to accelerate a large motor of this type is enormous. Having reached this conclusion it became necessary to provide friction clutches for accelerating and reversing the load. As the Wellman-Seaver-Morgan Company already had several smaller plants in successful operation, using alternating current on similar hoists and as the repairs and renewals for clutches had not been excessive it was decided to adopt a similar method.

Before describing the hoisting machinery it may be well to consider its work and first view the plant from the exterior. Fig. 1 shows the head frame, which is 93



Fig. 1.—Exterior View of the Water Hoisting Plant at the Hampton Mines of the Delaware, Lackawanna & Western Railroad Company.

all the valuable points of a steam hoist and is at the same time automatic. The mechanical details of the hoist and its automatic devices were worked out by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, and the plant now completed has proved very successful. Most of the electrical controlling devices were furnished by the Electrical Controller & Supply Company, Cleveland, Ohio.

The original specifications called for a hoist capable of raising 4000 gallons of water per minute to a height of 550 feet. The total weight to be raised included besides the weight of the water itself the weights of the bucket and rope. One gallon of water weighs 8.33 pounds, so that the total water weight was 33,320 pounds. One-half the weight of the water was allowed for the bucket and 550 feet of 2-inch rope at 6.3 pounds per foot weigh 3465 pounds. The total of all weights was 53,445 pounds. Two-inch steel rope was calculated to be of proper strength, and to raise the entire load in a min-

feet high from the base to the center of the sheave at the top. It is built of structural steel and from it are suspended two buckets, each 6 feet in diameter and 19 feet 6 inches deep. The capacity of each bucket is 17 tons of water. In the bottom of each bucket are located two lift gates with an area practically equal to the cross section of the bucket. These gates are lifted automatically when the bucket reaches the top, allowing the water to be discharged through the bottom into a spout fitted below the bucket, which deflects the water to either side into two large reservoirs. The buckets work alternately, one descending while the other ascends, and each bucket makes a round trip in one minute and 50 seconds, the total lift being 555 feet.

Figs. 2 and 3 show two views of the hoist. The motor is connected to a short shaft having a bevel pinion at its end, which drives a pair of bevel wheels in opposite directions. The bevel wheels run loose on their shaft and are fitted with Webster, Camp & Lane friction

clutches. The operating mechanism for the clutches is so designed that only one clutch can be thrown in at a time, but both clutches can be out at the same time. Throwing in one clutch runs the drums in one direction, throwing in the other reverses the motion of the drums. A pinion is keyed to the shaft supporting the bevel wheels, which meshes with the main gear on the drum shaft. The drums are of cylindro-conical type, increasing in diameter from 10 to 16 feet, their peculiar shape being intended to reduce the shock of starting the load from rest. At a hoisting speed of 550 feet per minute the drums make about 15 revolutions per minute. Between the drums there is one main brake. All of the clutches and brakes are operated by auxiliary air cylinders fitted with oil cushion cylinders, the compressed air being furnished by a motor driven air compressor, and supplied through tanks located near the hoist.

The hoist is controlled by a mechanical device, which may be seen near the motor in Fig. 3. This comprises a drum rotated by a friction drive from the motor

the valve drops and the weights on the brake lever set the brake. The clutches are also thrown out by weights. As is the case with the brake, either clutch can only be thrown in when there is current in the solenoid and air under the piston, and if either current or air pressure fails the clutch is disengaged. The motor shaft is fitted with an emergency brake, shown in Fig. 3, which is operated by a weight controlled by a solenoid in series with the motor winding, and if current ceases to flow the brake is set, holding the motor shaft from turning. An interruption to the flow of current to the apparatus as a whole stops the machinery, throws out the clutches and puts on the brakes. In the head frame a safety cut-out is provided that, in case a bucket is carried beyond the proper height, cuts off the current.

Lukens Improvements.—The Lukens Iron & Steel Company, Coatesville, Pa., is adding two 50-ton open hearth furnaces to its steel plant, together with a new electric charging machine and the necessary ingot cranes

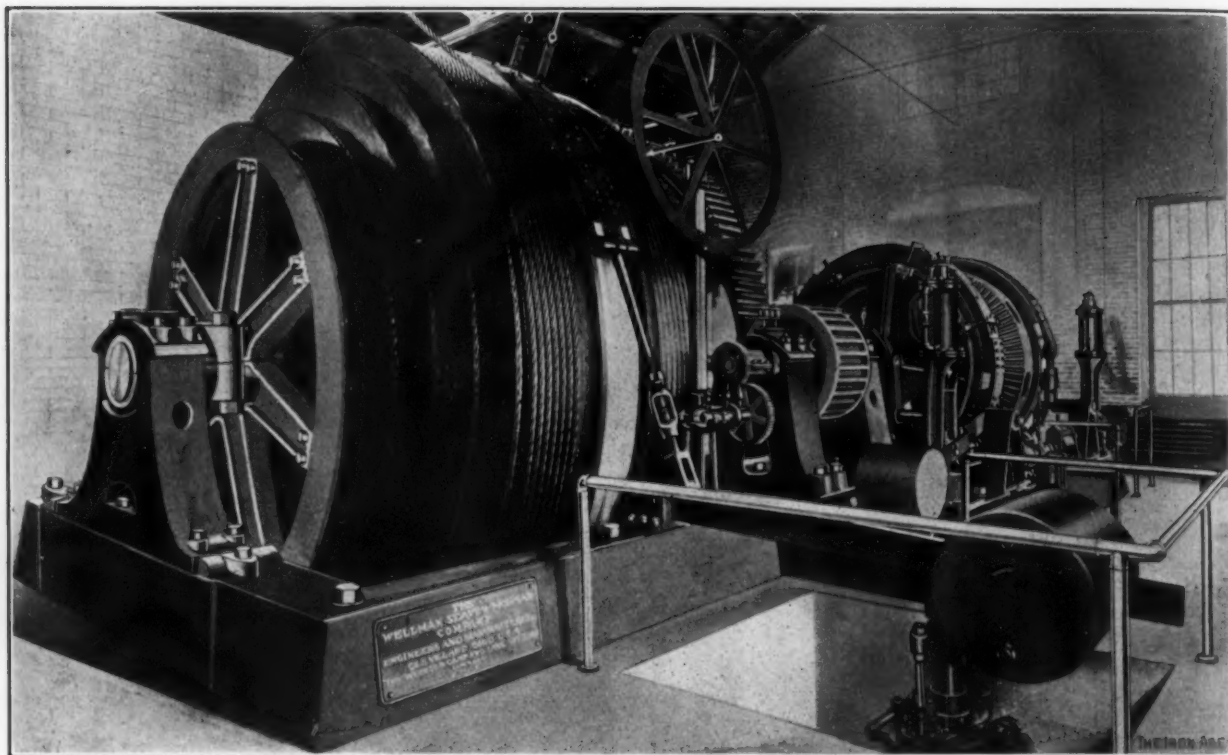


Fig. 2.—The Hoisting Equipment, Installed by the Wellman-Seaver-Morgan Company, Cleveland, Ohio.

through a sprocket chain. The drum shaft transmits motion to a secondary variable speed shaft, which in turn operates a secondary stop. The main hoisting drum shaft operates a traveling nut, which at either end of its travel releases a stop and allows the controller drum to make a quarter turn. This movement, through suitable electrical connections, energizes a solenoid on the clutch valve, releasing the clutch, and a solenoid on the brake valve, setting the brake, while at the same time further movement of the controlling drum is arrested by the secondary stop. This stop is released by the variable speed shaft and its connections after a predetermined time corresponding to the interval required to empty the bucket. The controlling drum then releases the brake and throws in the reversing clutch, thus starting the hoist in the opposite direction, and also starting the traveling nut on the controlling mechanism in the opposite direction. At the end of the hoist the cycle of controlling movements is repeated and so on, making the hoisting operation continuous and automatic.

Much attention has been given to the safe operation of the hoist. The main brake is of the gravity type and can be released only when current is flowing through the solenoid operating the valve so that air can be admitted to the under side of the brake piston. If for any reason the supply of either current or air is interrupted

for serving the furnaces. The building which houses the open hearth steel plant is extended 225 feet in length, which will allow room for another furnace if it should be found to be needed. The company is also installing machinery in its new flanging department, the construction of which was undertaken some months ago. The largest and most powerful modern machinery for machine flanging is being installed so as to be fully up to date; the company, in fact, is endeavoring to make this department superior to anything now in operation. It is just 20 years since machine flanging was added as a department of the Lukens plant and the business has grown to very large proportions.

Liman C. Smith and H. G. Wilkinson have organized the Toledo Shipbuilding Company, with a capital stock of \$1,000,000, to operate the plant of the Craig Shipbuilding Company at Toledo, Ohio, which has been purchased. The plant, which covers 19 acres of ground and embraces a machine shop, foundry and other departments necessary for the building of ships is to be materially increased. The company will also construct new dry docks. Alexander McVitte, formerly president of the Detroit Shipbuilding Company, is president of the new company, and C. B. Caulder superintendent and general manager.

A National Coal Operators' Organization.

The National Association of Bituminous Coal Mine Operators was organized in Chicago November 22 by mine operators from ten States. This organization has been called into existence as a matter of protection from labor organizations, and efforts will be made to secure the support of all the bituminous operators in the United States. Pennsylvania, West Virginia and Kentucky were not represented, but the promoters of this new organization believe that they can secure the co-operation of the coal mine operators in these States before January, when the employers meet the miners at Indianapolis to adjust the wage agreement that expires on April 1.

By reason of the great strength of the United Mine Workers, it was deemed advisable to bring about this organization, whose purposes will be to resist wage demands and working conditions, to enforce fulfillment of contracts with the unions, to deal directly with the Executive Board of the miners rather than with local bodies, and to protect each other mutually by trade agreements when one member of the association is a victim of the strike, to enforce lockouts where the mine workers cannot

entertainments and excursions in Great Britain. A movement has been started in Germany by the Verein deutscher Eisen und Stahl Industrieller and by the Verein deutscher Eisenhuettenleute to invite the members of the American Institute of Mining Engineers to visit Germany after the meeting in England.

The Jones & Laughlin Steel Company Explains.—

The daily press has placed the Jones & Laughlin Steel Company in a false position by printing incorrect reports of the action of the company in securing possession of a piece of property in Pittsburgh now being utilized in the building of a large structural mill. To provide a site for this mill two blocks of city houses were torn down, one of the houses being occupied by a widow named Mrs. Lott. Reports were printed that the Jones & Laughlin Steel Company had forcibly dispossessed Mrs. Lott of her property without agreeing to pay her a fair price for it. The company, however, has issued a statement explaining the matter, which shows that no injustice was done to the widow, who had a dower interest in the property, while the title was vested in her children, who are adults. The children accepted the company's offer

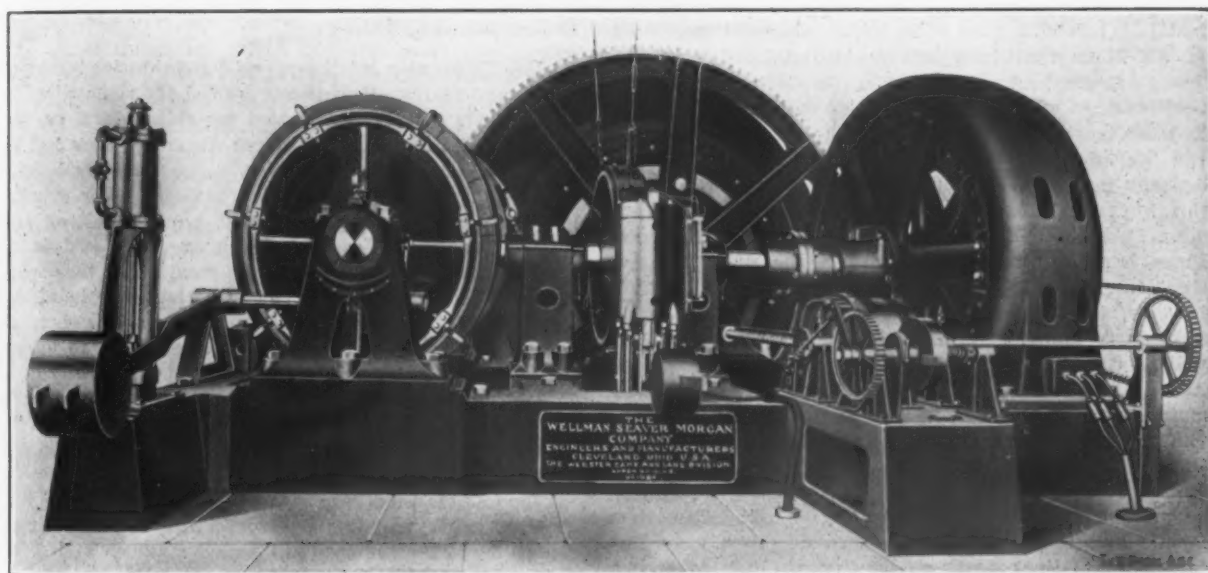


Fig. 3.—Another View of the Hoist, Showing the Driving and Controlling Arrangements.

be handled in any other way. No attempt will be made to agree on prices or to deal as an organization with the railroads.

The convention was attended by 82 delegates, who favored the formation of the association, and resolutions and by-laws are to be drafted by the chairman or president of the several bituminous coal operators' associations, together with the commissioners and secretaries, who will constitute a committee which is to report to a meeting of the coal operators interested in the near future. The committee is made up as follows:

Illinois: O. L. Garrison, president; Herman Justl, commissioner; C. L. Scroggs, secretary of commission.

Indiana: J. C. Kohlsen, president Bituminous Association; P. H. Penna, commissioner; W. J. Snyder, vice-president Block Association; W. H. Zimmerman, commissioner.

Eastern Ohio: T. E. Young, president; P. H. McBryde, secretary.

Michigan: H. M. Randall, president; T. W. Davis, commissioner.

Iowa: C. H. Morris, president; John P. Reese.

Southwestern Association: W. C. Perry, president; Bennett Brown, commissioner.

The announcement is made that the joint meeting of the Iron and Steel Institute and of the American Institute of Mining Engineers will begin in London July 23, 1906, and will continue about two weeks, including all sessions,

for the property, as it was much in excess of its actual value, and at the same time the mother was willing to give up possession, but subsequently changed her mind. Legal action was then taken by the company and title to the property was lawfully secured.

Round and Square Furnaces for Brass Melting.—

The merits of round furnaces as compared with square furnaces for melting brass are discussed by the *Brass World*. It notes that in the ordinary brass foundry a shell of sheet iron is lined with circular fire brick, giving the round furnace. There are but few examples of the square furnace in the brass foundry. However, in the brass rolling mill industry the square furnace is almost exclusively used, and but one brass rolling mill in the United States is referred to that uses round furnaces. Some of the large brass rolling mills have recently overhauled their furnaces and have uniformly adhered to the furnace of square design. In fuel consumption there is no difference, as it is possible to make a square furnace with the same cross sectional area as a round furnace. For the latter a more even distribution of coal around the crucible is claimed. Those using square furnaces maintain that this makes no difference and that the square furnace is more easily and cheaply repaired. The conclusion drawn is that for a large installation the square furnace is preferable, while for a small plant like that of the brass foundry the round furnace has more advantages.

Ontario and the Tariff.

TORONTO, November 18, 1905.—Ontario's views on the subject of customs duties are now being ascertained by the Tariff Commission. During the past week that body has been conducting its inquiries in this city and will spend the next week at other points in the southwestern part of the province.

Ontario's Pre-eminence.

Of all the Canadian provinces Ontario is the most populous and wealthy. Notwithstanding the great headway made by Manitoba, Saskatchewan and Alberta in the production of grain the Lake Province still holds the foremost place in agriculture. Its leadership in manufacturing industry is still more secure. If it has not coal it is no worse off in that respect than Quebec and, like the French province, it is richly endowed with water power. It has fair prospects for expansion both in agriculture and manufacturing. In the two-thirds of its area that has yet to be reclaimed from the wilderness there are known to be great stretches of fine farm land. In the same region are very extensive timber belts which, according to forestry experts, can be so administered as to be made an inexhaustible source of material for sawmills, pulp mills, paper mills and the works of all kinds that turn lumber into finished products. There are great mineral tracts in the same northern and northwestern wilds. Intimations of what may be found in these tracts are given by the nickel-copper deposits in the Sudbury neighborhood and the cobalt-silver-nickel deposits in the Temiskaming country. Water powers in this hinterland abound. The railroad now in progress must hasten the utilization of these natural resources. From Fort William to a point on the main line of the Grand Trunk Pacific, 205 miles north and slightly west, the Lake Superior branch of that road will soon cross Thunder Bay district. The Algoma Central will be completed in a short time across the section of Algoma between Sault Ste. Marie and Missinable on the main line of the Canadian Pacific Railroad. The Provincial Government's line—the Temiskaming & Northern Ontario Railroad—stretches now 112 miles northward from that northern railroad point, North Bay, and is to be pushed on at least to Lake Abitibi. The Canadian Pacific and the Canadian Northern are both near the completion of lines starting from Toronto and traversing the backwoods districts of Muskokee, Parry Sound and Algoma to Sudbury. And if the main line of the National Transcontinental Railroad is ever built by the Government, which some people doubt, it will make a longitudinal track, in the geographical sense, through the districts of Nipissing, Algoma, Thunder Bay and Rainy River. Productive enterprise cannot linger long in the van of the transportation enterprise which is thus scoring New Ontario with railways.

In Old Ontario there is no backwardness on the part of capital, as has been shown by the numerous recent flotations of new companies, the increasing of the stock of old ones and the undertaking of ventures such as a few years ago would have been looked upon as possible projects for future ages. The present rapid extension of the electric railway mileage would have seemed audacious a decade ago. It would then have appeared nothing short of madness for three companies to establish works for the production of between 300,000 and 400,000 horsepower of electrical energy at Niagara Falls. Ontario is under way in what is believed to be a great forward movement, and the balance of its opinion is undoubtedly on the side of a protective policy as an aid to that movement. If the large majority this province polled against the Dominion Government could be analyzed one of its main elements would be found to be the protectionist sentiment. While the Government could not be regarded as positively antiprotectionist, the former free trade utterances of certain of its members could not be forgotten, and the unwavering adhesion of the Opposition to the national policy rallied Ontario voters to it. The consensus of the testimony was that any changes made should be toward the lowering of the tariff.

Tin Plate.

On Tuesday A. E. Kemp, M. P., head of the Kemp Mfg. Company, Toronto, was the chief spokesman of a deputation asking that tin plate be left on the free list. Mr. Kemp's works are among the largest consuming tin plate in Canada. Mr. Kemp, it should be noted, is no free trader, but he takes the view that industries must have raw material. At the hearing before the commission he produced a prospectus in which it was represented that the Government had promised to aid the tin plate industry. The prospectus in question was that of a company which proposes to manufacture tin plate in Canada. Mr. Fielding replied to Mr. Kemp that the utmost that had been promised by the Government to the promoters of the company was careful consideration. Mr. Kemp submitted figures to show that the time has not arrived when tin plates can be manufactured to advantage in Canada, and that a duty for the protection of their manufacture would work serious injury to industries now existing.

Representatives of the canning industry urged that tin plate be not made dutiable, as an import upon it would increase the cost of their product and affect their business adversely.

J. O. Thorn of the Metallic Roofing Company, Toronto, also opposed the idea of a tin plate duty.

Sheets.

Mr. Thorn also led the opposition to duties on copper sheets and plates. He further desired the removal of the 5 per cent. duty now imposed on rolled iron or steel sheets, No. 17 gauge and thinner; Canada plates and flat galvanized iron or steel sheets, terne plate and rolled sheets of iron or steel coated with zinc, spelter or other metal. Rolled iron or steel hoop, band, scroll or strip thinner than No. 18 gauge, which are embraced in the same tariff item as the sheets, he would also make free, the duty being now 5 per cent. On the other hand Mr. Thorn held that the duty on manufactures of galvanized sheet iron and of galvanized sheet steel ought to be subjected to a higher duty than the present general rate of 25 per cent. and preferential rate of 16.2-3 per cent. To protect the Canadian industry against the product of the cheaper British labor he suggested that the minimum duty be made 25 per cent.

The Canada Steel Goods Company asked that the duty on steel strips used in the manufacture of strap hinges, T-hinges and butt hinges be lowered, as such strips, the company alleged, are not made in Canada in sufficient quantity.

Representatives of the stove industry asked for a duty of 1 cent per pound in addition to the present ad valorem duty of 25 per cent.

The manufacturers of farm implements asked that duties on competing products be "evened up" to 25 per cent.

Enameled Ware.

TORONTO, November 25.—An interesting statement was laid before the Tariff Commission on Tuesday at its meeting in London. It was presented by A. E. Kemp, M. P., Toronto; John McClary, London; H. G. Wright, Hamilton, and James Davidson, Montreal. It calls for checks upon undervaluation and justifies the existence of the association in which the enameled ware manufacturers are joined. This latter point is of special importance at the present moment as proceedings have begun in Toronto against associations suspected of being in restraint of trade. The books of Jenkins & Hardy, a Toronto firm, accused of organizing such associations, have been seized by the crown attorney. The firm in question is supposed to be connected with a large number of such associations in a secretarial or other official capacity. Among the associations to which the firm is said to have given its services are several whose industries come under heads of the iron and steel manufactures. The enameled ware manufacturers form a group by themselves. The statement of the enameled ware manufacturers is in part as follows:

"During the course of the development of this industry the manufacturers in Canada have consulted with each other and have worked together in an association,

the objects of which have been to adopt such methods in respect to manufacture as would lead to the greatest consumption of the wares which could be produced in Canada, with a view of having their plants occupied. There has at no time been an attempt made to restrict production, but on the other hand the controlling factor which has determined the policy of the manufacturers is that the amount of their product which could be sold was capable of being increased indefinitely by cheapening the cost.

"Notwithstanding the great advance in labor within the last four or five years the manufacturers have not advanced the cost of their wares, but on the other hand the selling price has been materially reduced.

"There are no 'pooling' arrangements between them; each one runs his business absolutely independent of the other. There is no discrimination in prices. The wholesale merchant purchases at a slight discount below the retail merchant, and is therefore able to sell to the retail merchant at the same price as the manufacturer."

C. A. C. J.

A marked feature of the Tariff Commission's sessions since leaving Toronto is a demand for minimum valuation where ad valorem duties are levied. At London one manufacturer said that he was regularly paying the dumping duty on shipments of steel from the United States and even then was getting the steel cheaper than he could elsewhere. At Windsor representatives of a bridge building company at Walkerville, which is turning out 16,000 to 17,000 tons of steel work annually, complained that the dumping clause operated against them and was a condition they had never contemplated when they established themselves at Walkerville. At Chatham the commission heard several farmers' delegations plead for reciprocity with the United States, and failing in that an increase of the British preference and lower duties all around. All claimed that protection was detrimental to them.

Recent Customs Decisions.

Steel Strips.

The new test case brought before the Board of United States General Appraisers at the instance of the Treasury Department to determine whether an additional duty of one cent per pound should be levied on steel strips has been decided by the lower customs tribunal adversely to the contention of the Government. The test case stood in the name of the Crucible Steel Company of America, but is representative of many other protests filed with the tribunal and now on the suspended files awaiting final adjudication of the test litigation. The board holds that it sees no reason for departing from the conclusion reached by the Federal Circuit Court of Appeals last March, when that tribunal held that no extra duty applies to the strips.

The question raised in the latest litigation is precisely the same as that passed upon favorably to the contention of the importers last spring. General Appraiser Fischer, who writes the decision for the Board of Appraisers, says that the present proceedings were brought in consequence of the desire of the Government to make a new case on additional evidence as to the commercial understanding of the term "cold rolled, smoothed only," as it appears in paragraph 141. After remarking that the issue has been ably presented, Mr. Fischer says: "We are convinced, however, after hearing and perusing all the testimony and a full consideration of the points raised in the briefs of the counsel for the Government that we should not be justified in reaching a conclusion and making a ruling at variance with that announced by the Circuit Court of Appeals."

At the offices of the board it was said that Secretary Shaw will direct an appeal to the Circuit Court, and that if defeated there the Court of Appeals will be asked to pass upon the question. Mr. Shaw is credited with the belief that eventually the courts will sustain the contention of the Government.

Old Steel Rails.

In a decision rendered November 23 the Board of United States General Appraisers sustained a claim filed by P. McGettrick, Burlington, Vt., relative to the classification to be imposed upon broken steel rails. The claim was made that certain old steel rails upon which duty was assessed at the rate of 7-20 cent per pound under the provision in the tariff for T-rails should properly be assessed at only \$4 per ton under the provision for scrap steel. They consisted of old street railway steel girder rails which had been used in the streets of Canadian cities and after being torn up were broken into pieces of irregular length. The board finds that the rails are utterly unfit for use as such and should be granted the lower rate.

Scrap Steel from Exported American Hoops.

A decision has been rendered by the Board of United States General Appraisers in the protest case of John J. Beck, who filed an appeal against the action of the Collector at Buffalo, N. Y., in assessing duty at the rate of \$4 per ton on scrap steel. The importer claimed that the merchandise should have been accorded free entry as being of the produce or manufacture of the United States. The merchandise was exported from this country to Canada in the form of hoop or band steel and returned to the United States as scrap steel. In sustaining the protest Judge Somerville says that the article is entitled to exemption without the production of a clearance certificate from this country on satisfactory proof of the identity of the articles, it being impracticable or impossible to produce such certificate from the nature of the importation.

Steel Parts of Talking Machines.

The Board of Appraisers November 22 overruled a claim made by the Universal Talking Machine Mfg. Company, New York. It was contended by the importer that small pointed implements about $\frac{5}{8}$ inch in length used in talking machines for pressing against the revolving records should be admitted at the rate of 25 per cent. under the provision in the tariff for "needles, not specially provided for." The articles are made from round steel wire, valued at more than 4 cents per pound, and the Custom House authorities levied duty under paragraph 137 at the rate of 40 per cent. and $1\frac{1}{4}$ cents per pound. General Appraiser Fischer, who writes the decision for the tribunal, says in part that "the practice of calling them needles which now obtains to a limited extent has arisen since the enactment of the present tariff, and that they were known prior to that time and up to the present as pins or points. We hold accordingly that the points are not dutiable as needles, but fall within the provisions of paragraph 137 as articles manufactured from round steel wire."

The Crocker-Wheeler Company, Ampere, N. J., announces the establishment of an industrial engineering department in which is concentrated all work in the line of industrial engineering as applied to railroad shops, machine shops and industrial plants of every description. The company recognizes the desirability of offering to purchasers of its motors and generators such engineering advice as may be needed to the end that the installation may prove thoroughly satisfactory. Among those who have availed themselves of the service of the company in this line are the Lake Shore & Michigan Southern Railroad, John Simmons Company, Bucyrus Company, Ansonia Brass & Copper Company, American Bridge Company, Pittsburgh & Lake Erie Railroad, Joseph Dixon Crucible Company, Ingersoll-Sergeant Drill Company, &c. J. K. Warner Davenport, formerly a consulting engineer making a specialty of industrial work, has been engaged as the head of this department.

Chain manufacturing companies at Pittsburgh, Pa., and Maxwell, Ind., propose to contest at law the carrying out of a contract between the Indiana Chain Works and the Board of Control of the Reformatory at Jeffersonville, Ind., one of the State prisons. The board has made a contract to supply chains made by 150 inmates for five years at fixed prices to the chain company.

A New Bullard Boring Mill.

In the new 54-inch rapid production boring and turning mill of the Bullard Machine Tool Company, Bridgeport, Conn., a distinguishing feature is the elimination from the feeding mechanism of pull gears and crank handles. All movements but the fine adjustments of the heads, for which ratchet handles are used, are accomplished by power. Another feature original with the Bullard Company is called the "automatic principle of control," which provides for the centralization of all operating levers at the right hand side of the machine, as illustrated in Fig. 1. This scheme has been adhered to for every movement and adjustment of the machine except those of the left hand head, this being the only part to manipulate which the operator must leave his position near the other controlling levers. The actual maximum

acting brake and all movement of the associated parts are interlocking. By turning the pilot wheel the friction clutches in the speed box are operated and by raising the lever the brake is applied.

Upon the speed box lever there is a five-bladed plate, D, which accomplishes the interlocking. The blades of the interlocking plate correspond in position to the spokes of the pilot wheel. When the pilot wheel is in position for one of the speeds the corresponding blade on the interlocking plate is in its upper position, and a latch locks in one of the three notches on the collar on the reducing gear rod. Changes in the reducing gears can be obtained only when the brake is applied, which releases the latch in the collar on the reducing gear rod. The lever C for making the changes prevents the brake lever from being released until a gear is fully engaged. The brake can be set only when the speed box is disengaged, and the

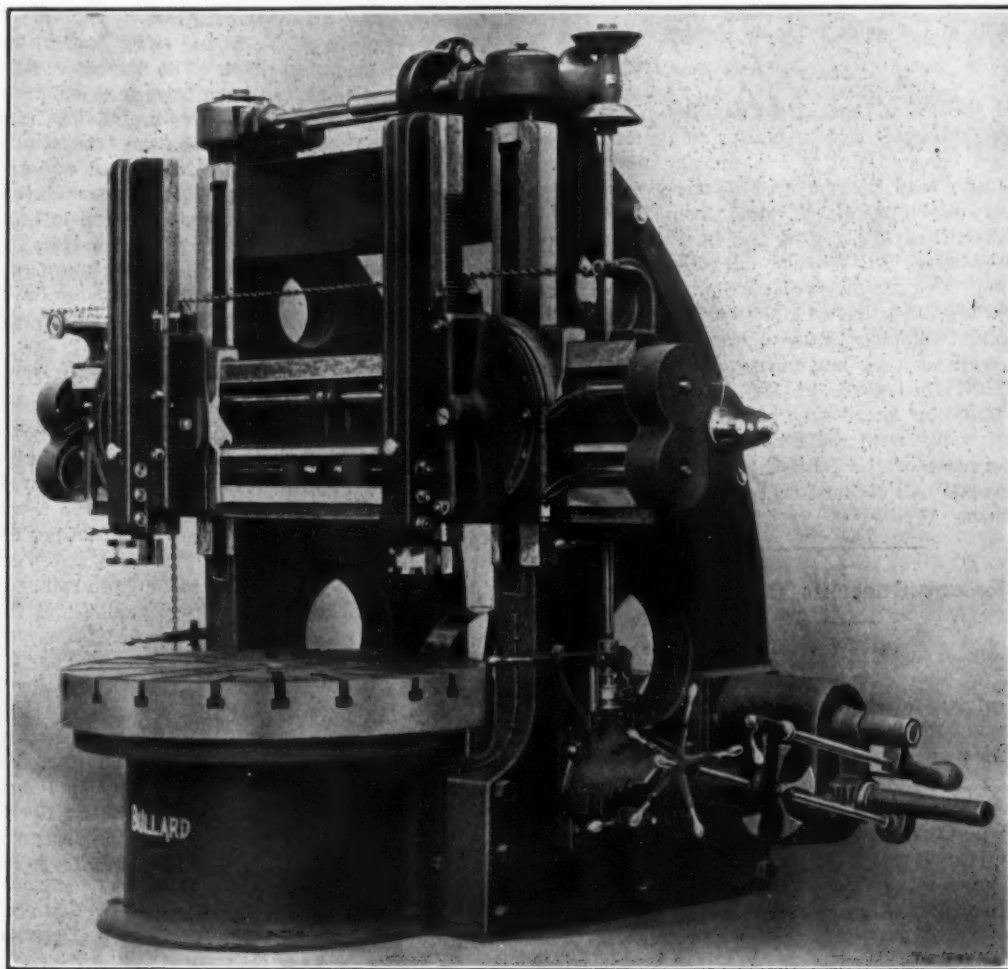


Fig. 1.—The New 54-Inch Boring and Turning Mill Built by the Bullard Machine Tool Company, Bridgeport, Conn.

swing of the machine is 56 inches and it will take work as high as 42 inches. The table proper is 52 inches in diameter.

Fifteen changes of table speed ranging in geometrical progression are obtained from a single speed driving pulley through a speed box containing friction clutches, and three reducing gears in the headstock. The speed box is attached to the rear of the right-hand housing, as shown in Fig. 1, and the reducing gears are mounted on the head between the housing, as may be seen in Fig. 2. The speeds are controlled by the pilot wheel A, Fig. 3, on the end of the speed box lever B. Five changes of speed are effected directly through this wheel, each spoke of the wheel indicating a speed, the one in action being that corresponding to the spoke which is uppermost and vertical. Three series of the five speeds are obtained through the back gears, which are manipulated by the lever C behind the pilot wheel. The rod carrying this lever is provided with a collar, on the face of which are three notches, one for each of the three series of speeds. The pilot wheel rod B used as a lever controls a quick

speed box lever cannot be operated until the brake has been released. From all of these provisions it will be seen that the driving mechanism is safely guarded against injury. To change from one series of speeds to another it is necessary to revolve the pilot wheel until none of the five blades of the interlocking plate rests against the collar. To secure such a position the speed box must necessarily be disengaged. The speed box lever is then raised, which applies the brake, stopping the mill instantly, and also disengages the latch from the collar. The lever C may then be turned to the desired series of speeds, and the latch on the interlocking plate D locks into this notch when the brake is released.

The speed changes being so readily obtained the question of motor drive is simple. A constant speed motor fully meets the requirements and may be mounted on a bracket between the housings, as shown in Fig. 2. This bracket is so designed that if gear or chain drive is considered preferable the motor may be suspended beneath the bracket and gears or sprockets substituted for the pulleys shown.

The operator has full control of the heads through the levers protruding from beneath the cross rail at the sides of the machine, one of them being shown at I, Fig. 3, and the levers E, F and G on the feed box. On the intermediate shaft, back of the cross rail, are three gears, one of which is keyed to the shaft, while the other two may be clutched to it. One of these gears meshes with a gear on the cross feed screw and the other with a gear on the vertical feed screw. The controlling lever I operates two clutches, causing either the cross feed gear or the vertical feed gear on the intermediate feed shaft to run with the fixed gear. Throwing the lever outward starts the cross feed and inward the vertical feed, while in the central position both heads are stationary.

There are ten changes of feed in the feed box, ranging from 1-32 to $\frac{3}{4}$ inch for each revolution of the table. Two feeds are obtainable for each position of the sliding

as to engage in but one position, consequently the rapid traverse may be used in thread cutting with no danger of spoiling the thread.

Both the upper and lower holes for the lever H correspond to neutral positions, in which neither the quick traverse nor the feed box are engaged. The necessary double action of the clutch in disengaging at two positions of the lever is accomplished by a bell crank device. The lever H has two other positions, one above the upper latch hole and the other below the lower hole. These are those used when the quick traverse is desired for adjusting the heads to the work. The upper position gives out and up feeds and the lower position in and out feeds. Both cross feed and vertical feed are provided with a double acting ratchet, J, which operates the screw for fine adjustments. These ratchets automatically release their grip when the actuating pressure is relieved. This

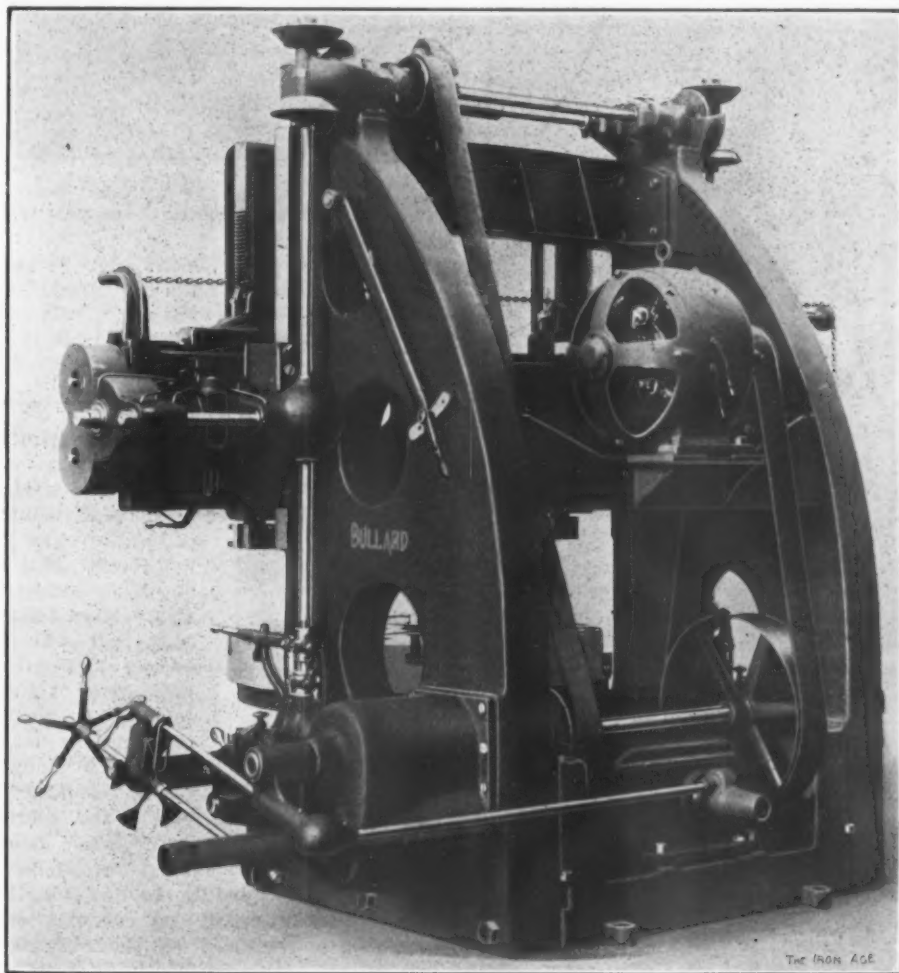


Fig. 2.—A Rear View of the New Bullard 54-Inch Boring and Turning Mill.

tumbler gear bracket E, according to the position of the lever F. The feeds are positive and the feed mechanisms of the two heads are independent of one another. For changing the direction of the horizontal or vertical feeds of the heads there is a reversing lever at C.

The heads may be operated in all directions by a quick power traverse device, hand cranks being entirely done away with. The drive is obtained from the vertical feed rod by engaging it with the cone frictions at its upper end by raising or lowering the horizontal lever H, shown in Fig. 3. Engaging this quick traverse disengages the drive from the feed gear box by releasing a clutch. There are three latch holes in which the lever H locks. In the central position of the controlling lever H the feeds are engaged, but by raising or lowering the lever the clutch is released and one or the other of the cone frictions is brought into contact with a high speed horizontal shaft at the top of the housings, the drive of which may be seen in Fig. 2, causing the vertical shaft to revolve at high speed. The connection between the vertical shaft and the feed box is a claw clutch so arranged

device renders it possible for the operator to set the tool to the proper depth of cut or the diameter required at close range and saves the time consumed in going to the end of the rail to make adjustments, as in the case of the ordinary machine having crank handles.

The construction of the rail is a feature which adds much to the rigidity and accuracy of the mill, as the entire weight of the head is supported by the bearing at the bottom of the rail, the upper bearing serving only to resist the tendency of the head to tilt forward under the pressure of the cut. The feed screw is directly in the center of the long, narrow guide bearing, consequently there is no tendency to cant and bind on the rail as in the usual construction. The same principle of a guide bearing having great length in proportion to its width is used in maintaining the alignment of the center stop on the rail, the rail being held central by a gibbed block having its bearing in the recess in the face of the right hand housing.

Another notable feature is the method of driving the top shaft which operates the screws for raising and low-

ering the cross rail, shown in Fig. 2. The change in direction of movement is secured by tumbler gears, the driving pinion of which is cut in the end of a quill which is a running fit on the top shaft, the driving key being located in the middle of shaft in order to equalize the torsion between the ends.

Lubrication of all parts subject to wear has received

tion of its entire surface, while a felt ring feeds oil to the vertical journals. In Fig. 4 will be seen the main features of this bearing; also the indicator for proper oil level at the left side of the bed.

A thread cutting attachment is not a part of the regular equipment of the mill, but may be applied at any time with no further change than the substitution of exten-

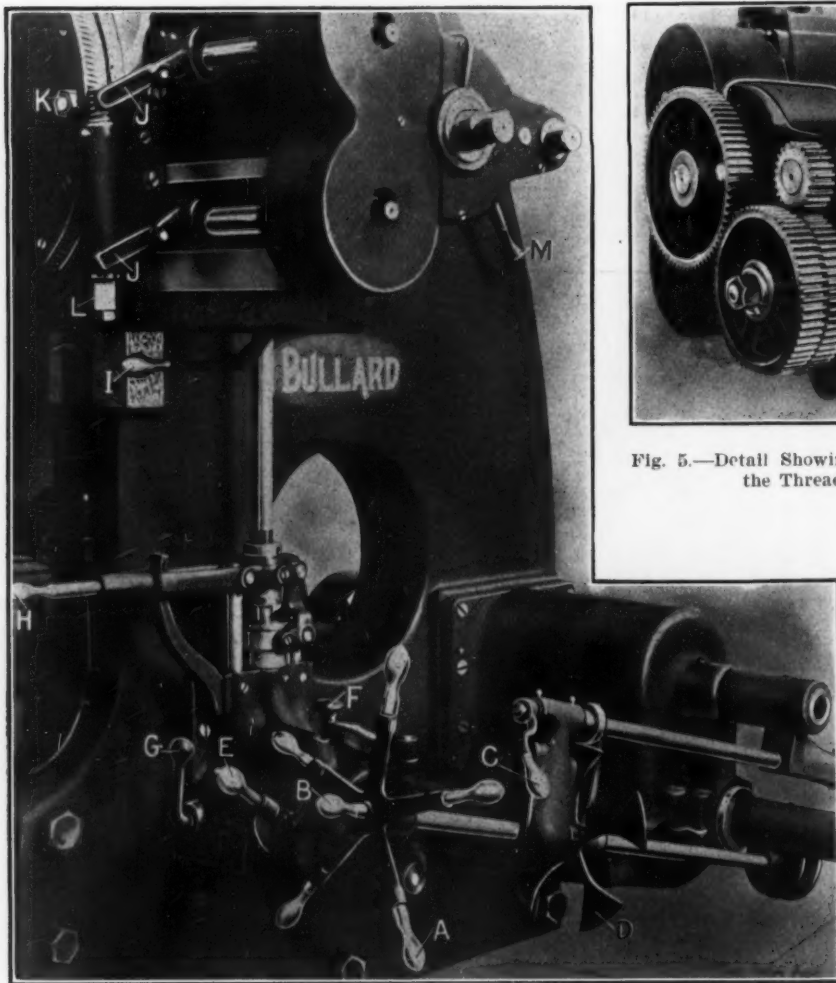


Fig. 3.—A Near View of the Controlling Devices.

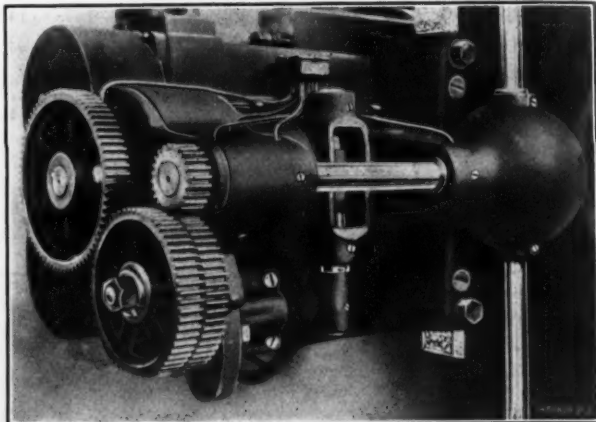


Fig. 5.—Detail Showing the Additional Gears Necessary When the Thread Cutting Attachment is Used.

sion studs for the bushings in the feed bracket on rail. Fig. 5 shows the rail bracket with the additional gears necessary for the threading attachment.

Heat Treatment of Steel in Large Masses.—Changes in the character of steel due to various methods of cooling are discussed in the November 1 issue of *Stahl und Eisen*. If a small specimen of carbon steel be plunged into water after being brought to a high heat the steel would be largely martensite. But if a large mass of steel of the same composition were subjected to the same treatment, the exterior skin, while it might still be martensite, would gradually be converted into troostite, while the center would consist of sorbite, though if the mass were sufficiently large there might even be a kernel of pearlite, notwithstanding the tempering in water. Test pieces would thus give very different results in accordance with the position from which the sample was taken. Two factors have therefore to be dealt with—the mass, and, as a result of the mass, the time. From the paper of Cosmo Johns, read before the Iron and Steel Institute in 1904, "Notes on the Production and Thermal Treatment of Steel in Large Masses," a number of tables are given showing the effect of oil tempering on carbon steel, also the results of experiments with nickel steel containing 3.5 per cent. of nickel.

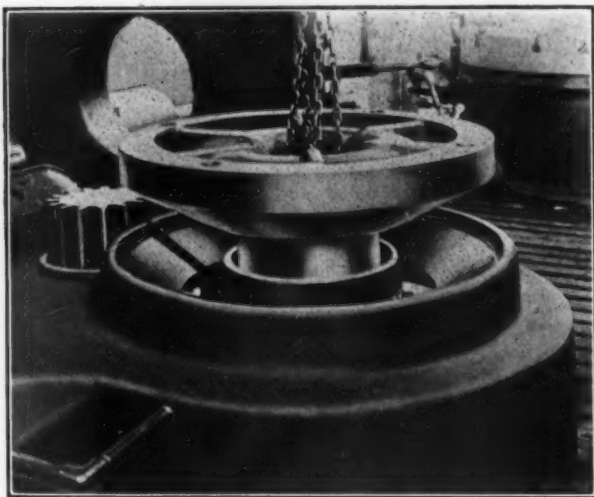


Fig. 4.—Detail of the Table Spindle Bearing.

special attention. Both the head stock and speed box are entirely inclosed and the splash system of oiling is used, the gears running in a constant bath of oil. All high speed shafts have ring or chain oiling boxes and gauges indicate the amount of oil in each. The angular thrust bearing of the main spindle is entirely immersed, oil pockets in the bed insuring ample lubrica-

The statement that the Tidewater and Deepwater railways may develop an independent line from Deepwater, W. Va., the western terminus of the roads now under construction, to Lake Erie or Lake Michigan, has given new importance to this interesting enterprise. The two companies—the Tidewater Railway Company and the Deepwater Railway Company—have a total of \$175,000 capital and there is no recorded bonded debt. The Deepwater Railway is to build from Deepwater to Rock, W. Va., 84 miles, and the Tidewater Railway from Rock to Sewall's Point, Va., near Norfolk, 362 miles. The new road is a direct low grade line from the West Virginia coal fields to the deep harbor on Hampton Roads and will compete with the Chesapeake & Ohio and the Norfolk & Western.

The New Trademark Law.

The Need of a Penal Provision.

The United States Trade Mark Association, New York, of which Arthur W. Barber is secretary, has published in the November issue of its *Bulletin* a discussion of the question of making the wrongful imitation of a registered trademark a penal offence under the United States statutes. Since the subject is one of growing importance to manufacturers we print below the greater part of this argument in support of proposed amendments to the law of 1905:

In the course of the agitation of several years which preceded the recent amendment to the United States trademark law, the matter of providing by criminal remedies for the punishment of counterfeiters or infringers of trademark rights was repeatedly pointed out and quite commonly conceded. The commission that in the year 1902 reported to Congress a proposition for the amendment of the law relating to trademarks embodied in its report a recommendation for the enactment of a law providing such remedies. In the general discussion which preceded the passage of the act of 1905 it was still admitted that such punishment for violation of trademark rights would be desirable. Notwithstanding these facts, however, advocates of a revision of the trademark law have generally refrained from recommending legislation of this character upon the ground that the incorporation of such provisions in a general revision of the trademark law would endanger and possibly prevent the passage of the entire measure. It was from such motives of prudence as this, we understand, that all penal provisions were omitted from the act of 1905. Whatever propriety there may have been in omitting such provisions in the first instance, now that the law has been passed and has become effective the proposition to add to the law additional provisions of the character mentioned cannot in any way imperil the results already gained.

An examination, moreover, of the history of trademark legislation, not only in the United States but in foreign countries, shows the propriety of such an amendment, and in fact its practical necessity, to bring the trademark law of the United States into line with those of most civilized countries.

History of Federal Trademark Legislation.

The first federal law on the subject of trademarks was enacted in 1870. This statute sought by registration in the United States Patent Office to protect, by action at law and suit in equity in the federal courts, trademarks throughout the territory of the United States, and to insure a right to the exclusive use within such territory. This statute was entitled "An act to revise, consolidate and amend the statutes relating to patents and copyrights," Congress assuming to legislate on the subject of trademarks in the exercise of its power under the Constitution to secure the authors and inventors the exclusive right to their productions and discoveries. Six years later this act was supplemented by one declaring the counterfeiting, the wilful imitation or the fraudulent use of a registered trademark a penal offense punishable by fine of not more than one thousand dollars and imprisonment of not more than two years.

The United States Supreme Court declared these acts unconstitutional,* and laid down the limitations to which such an act must conform in order to be sustained.

These cases came before the United States Supreme Court upon the review of the criminal proceedings instituted under the act of 1876, so that to the penal provisions of the statute was in a measure due the fact that it was declared to be unconstitutional. For this reason a prejudice seems to have arisen against penal legislation by Congress for the protection of trademarks, and a belief appears to have gained currency that the effect of these cases is to hold that such legislation is quite beyond the power of Congress. The defect, however, of the law of 1876 did not arise from its penal provisions, but

from the scope which it was attempted to give to the law, and the defect was one which was shared by the original act of 1870, the trademark cases declaring them alike unconstitutional. The sole ground for this decision was the failure to limit the scope of the acts, both as to their civil and penal protection, to marks used in interstate or foreign commerce and to exclude marks used only within the bounds of a single State.

The decision of the Supreme Court in these cases caused great anxiety to owners of trademarks and a constitutional amendment was proposed granting to Congress express power to legislate on trademarks. In 1881, however, Congress enacted a new law, which provided for the registration in the United States Patent Office of "trademarks used in commerce with foreign nations or with the Indian tribes," and protected them by means of actions at law and suits in equity in the courts of the United States. The penal provision incorporated in the law of 1876 was not re-enacted.

The law of 1905 extends the scope of Federal trademark protection to such trademarks as are used in commerce between the States, thereby exhausting, so far as concerns the civil remedies that can be conferred by Congress, its power to legislate upon these matters. Under the law, therefore, as it now stands the Federal statutes assume to afford no protection to trademarks used within a single State. These marks are left without the purview of the statute by reason of limitations upon the powers of Congress declared by the Supreme Court in the trademark cases. As to such marks the only protection that can be afforded is that which is derived from the legislatures of the particular States.

The Trademark Laws of the States.

In all of the States of the Union, except where it has been superseded by statutory enactment, the doctrine of the common law that protects trademarks as a species of property right is still in force and is administered by the courts of the several States. The protection afforded, however, under this doctrine extends only to civil remedies by injunction against infringement, or an action for damages or an accounting of profits. Infringement of trademarks was never a crime at common law.

In many of the States, however, statutes have been enacted making the counterfeiting, imitation or fraudulent use of a trademark a penal offense. In some States the penalties for the several offenses mentioned above vary in severity, counterfeiting being most severely punished. In some States the penalties of fine and imprisonment are alternative, in others cumulative. The States of Alabama and Arizona protect trade-union labels only, while in Kentucky, Kansas, New Mexico and South Carolina alone there are no penal remedies for the protection of trademarks.

The International Bearing of Our Trademark Laws.

There is another aspect of our trademark laws which emphasizes the need of such amendment to the legislation now standing upon the Federal statute books as shall provide a penal remedy for the protection of trademarks registered in the United States Patent Office—that is, its international aspect.

It became evident some years ago to the great commercial nations of the world that the protection of marks in commerce had become a matter of international importance. Their trade being no longer confined to their own territories, the marks of their merchants and manufacturers required some further protection than could be accorded them by the laws of their own countries. This matter was first formally discussed at an industrial congress held in connection with the Exposition of Vienna in 1873. The discussion so commenced was continued in the congress concerning industrial property held at the Paris Industrial Exposition of 1878. By resolution of that gathering a committee was named to induce the French Government to take the initiative in calling an official conference of the commercial nations of the world to formulate a convention for the protection of industrial property. Under the initiative of the French Government a conference was accordingly called at Paris, commencing November 4, 1880, which drafted the Convention for the Protection of Industrial Property, ratified at Paris in

* Trademark Cases, 100 U. S. 82.

1883, by 11 of the nations there represented. The adhesion of the United States to this convention took place under date of May 30, 1887, and was announced by proclamation of President Cleveland under date of June 11, 1887.

By article second of this convention it is provided that subjects of citizens of each of the contracting States shall enjoy in all the other States of the union, so far as concerns trade and commercial names, the advantages which the respective laws thereof accord to subjects or citizens.

This provision, it is true, binds the United States to grant to the subjects or citizens of the other members of the union only the protection which it accords to its own citizens, and so long as the Federal law does not provide penal remedies for the protection of the trademarks of American citizens we are under no treaty obligations to provide such remedies for the protection of foreigners. It will appear, however, from an examination of the trademarks law of foreign countries in this particular, that in order to extend to the citizens of foreign countries the same measure of protection which their laws extend to citizens of the United States it is incumbent on the Government of the United States to provide criminal proceedings for the punishment of wrongs against trademark property.

Why Trademark Infringement Should Be a Crime.

It would seem that a wrong which the laws of all countries except the United States, with practical unanimity, denounce as a crime, which is punished as a crime by the local statutes of most of the States in the Union, and which Congress itself in the impotent enactment of 1878 branded as such, might be considered to have been accepted by the opinion of the civilized world as a wrong of such character and magnitude that it is properly the subject of criminal prosecution. Nevertheless, there are not wanting those who decry any attempt to procure the enactment of a Federal law punishing this wrong as a crime, upon the ground that it is not one of sufficient seriousness to merit such stringent treatment.

The intentional use of another's trademark or of some infringement or imitation thereof can have but one purpose—to pass off the goods of the wrongdoer as those of another. The effort to accomplish this deception can be prompted by but one motive—the desire to reap an illicit profit at the expense of another. A trademark is imitated because by its presence upon the goods it gives them an increased value. When goods so marked are purchased because of the mark a portion of the purchase price represents the value of the trademark. It is that sum which the purchaser is willing to pay to get what he has learned accompanies the mark, a sum to which the rightful owner of the mark is alone entitled. The wrongful use of another's mark is therefore akin to the crime of larceny or the obtaining of money under false pretenses. It is on the one hand a theft from the owner of the trademark of what rightfully belongs to him—the money equivalent of his trademark upon the goods, and on the other hand it is a fraudulent obtaining of the purchaser's money, in that the equivalent which he seeks and believes he is getting is not in fact received. Such perfidious dealing and such dishonest appropriation to one's own uses of what belongs to another we punish as a crime when its purpose is accomplished by other means. Why make a distinction because the means to the end is the pilfering of trademark property?

Upon grounds of expediency, moreover, the establishment of penal protection for trademarks appears to be fully warranted. The deterrent effect of civil remedies is inadequate to protect the rights they are intended to conserve. For the counterfeiting or infringement of trademarks only a very small capital is required. The amount of a lithographer's bill for reproducing a label or turning out an imitation of it will serve to finance the most outrageous scheme of trademark piracy. Indeed, the more glaring the wrong the more likely is the perpetrator to be financially irresponsible and to regard with derision any attempt to redress the wrong by the award of damages against him. An infringer who is financially responsible and who has reason to dread the process of a civil court will at the worst seek to evade the law by imitating another's mark only so far as he believes he may do so

with some reasonable hope of safety to himself. An infringer, however, who cannot be compelled to answer with his property for the wrongdoing need exercise no ingenuity to make his infringement such as may form the foundation for a plausible argument that no infringement exists, unless he is in fear of criminal prosecution for his misdeed.

Moreover, in cases of trademark infringement damages are very difficult to prove, inasmuch as they can only be predicated upon proof that sales were made by the infringer which but for the infringement would have been made by the lawful owner of the mark. This it is usually impossible to prove, so that the right to recover a pecuniary compensation for the injury upon the basis of damages is of little practical importance.

The same considerations apply to an accounting of profits derived from the infringement, which is one of the forms that monetary compensation for infringement takes in courts of equity. The evidence as to the defendant's sales is usually to be obtained only from the defendant's books, and it is often the case that by keeping a double set of books, by falsifying the entries or by failing to keep books at all showing the records of the sales, he deprives the plaintiff of the evidence by which alone can be established a case against him.

The remedy by injunction is also more or less unsatisfactory in its operation, since it is not difficult for the real infringer to avoid liability for disobedience to the injunction by transferring his business and allowing it to be continued in the name of some other party.

Inadequacy of the State Laws.

Admitting the necessity of penal protection for trademarks, it may be argued that trademarks are sufficiently protected by the criminal laws of the several States and that, inasmuch as the wrong of infringement is always one perpetrated within the bounds of a State or Territory, it is enough that the law of that State or Territory punishes the deed as a crime.

To this argument, however, it may be replied, first, it is not true of all States that they have criminal legislation of this character. There are several States in which the counterfeiting or infringement of a trademark is no crime. Moreover, the penalties imposed in various States run through all degrees of inadequacy and severity, varying from a minimum imprisonment of five days in Nevada to a maximum of twenty years in Nebraska, and from a minimum fine of \$20 in Alaska to a maximum of \$2000 in Indiana. It will be seen, therefore, that even in the States where criminal provisions relative to trademark infringement are in force their deterrent value varies greatly.

Moreover, the enforcement of these laws is to a great extent dependent upon local conditions. However severe may be the penalties attached to the crime under the laws of any State, the law is of little practical advantage unless conditions are such that a conviction can be secured for its violation and an adequate punishment imposed. The elective judges who preside upon the trial of such offences in the several States are necessarily to a great extent subservient to the influence of opinion in their immediate locality. Where that opinion is disposed to make light of the offense, there will always be the disposition to unduly favor the defendant and, in the matter of sentence, to let him escape with as light a punishment as possible. These difficulties would be in a large measure removed by the enactment of a Federal statute that should substitute a uniform system of penalties for the multiplicity of State statutes that are now in force and put into the hands of the United States courts the enforcement of these penalties. It is a well-recognized fact that these courts are far more independent in the punishment of wrongdoers than are the State courts, that their judges and their juries are alike less open to the influence of local sentiment and less likely to be withheld by consideration of private friendship or local influence from the strict enforcement of the law and the adequate punishment of the crime.

The main defect, however, in the present system of criminal State legislation for trademark infringement arises from the provisions of the various local laws im-

posing conditions upon which the benefit of these penal provisions are dependent. In many States it is necessary, in order to sustain a criminal prosecution for infringement, that the trademark be registered in the office of the Secretary of State of the State in question. The fees for such registrations vary from \$1 in many States to from \$25 to \$100 in Arkansas, the amount in this State being determined by the Secretary of State in his discretion, and "depending on the length of the statement" upon which the registration is made. The practical result of these provisions is that it requires the owner of trademarks, who would obtain all the protection that can be afforded to him by the laws of the several States, to register his trademark in the offices of the Secretaries of State of some fifty independent jurisdictions, at an expense in fees and attorneys' charges which is very considerable. A Federal law which would make registration in the United States Patent Office the single condition of protection by penal remedies enforceable in the Federal courts would relieve the owners of trademarks of most of the necessity for complying with the burdensome requirements of the divers State laws.

The Limit of Congressional Control of Trademarks.

What has been said above regarding the history of trademark legislation in the United States indicates the limits within which Congress must keep in the enactment of a penal amendment to the United States law regarding trademarks. The most that it can do is to protect by criminal proceedings in the Federal courts trademarks used in foreign commerce and in commerce between the several States. Inasmuch as these are the trademarks which are now registrable in the United States Patent Office under the statute, it may be otherwise stated, for purposes of convenience, that the power of Congress is limited to the protection of such trademarks as are now registrable in the United States Patent Office. What is needed therefore is an amendment to the present law visiting with appropriate punishment the counterfeiting, imitation or infringement of trademarks registered under the law of 1905.

Section 16 of this law indicates a limitation upon the offenses that may properly be brought within the cognizance of such a penal clause. This section confines the civil remedies under the act to cases where the infringing mark is used in interstate or foreign commerce. The scope of the penal provision should be similarly restricted. They should presume to punish offenses against a registered trademark only when the offending mark is employed in interstate or foreign commerce. As to trademarks used only within the bounds of a single State Congress is without power to legislate for their protection either civilly or criminally.

Moreover, as to infringements, when the use of the infringing mark is confined to a single State, grave doubts must exist as to the authority of Congress to interfere or impose a punishment. The Supreme Court held that by the law in force prior to the enactment of the statute of 1905, Congress did not intend to give jurisdiction to the Federal courts except in cases where the infringing mark was used in commerce with foreign nations or Indian tribes.* Thereby the court avoided the question of the constitutionality of a law which should presume to punish the use, even within the bounds of a State, of a mark that infringed one registered under the statute. This decision afforded the suggestion for the form given to Section 16 of the present law, and if legislation of doubtful constitutionality is to be avoided prudence would dictate that any amendment of a penal nature to the present statute should observe the form of that section.

The desired amendment should therefore impose appropriate penalties upon whomsoever shall knowingly, without the consent of the owner thereof, reproduce, counterfeit, copy or colorably imitate any mark registered under the act and apply the simulated mark to merchandise the same or substantially the same as that upon which the genuine mark is employed, where the merchandise bearing the simulated mark is transported or is intended to be transported beyond the bounds of a single State.

* *Warner vs. Searle & Hereth Company*, 191 U. S., 195.

Belt Tighteners for Machine Shop Tools.

BY S. D. V. BURR.

We all know that during the past few years the electric motor has been widely adopted for the driving of machine tools, the motor being employed both for individual and group driving. Also we are all aware of the fact that there are managers of progressive works who have not listened to the shibboleth of the advocates of the motor, and in whose shops the line shafts, counter and belt are conspicuous. Inquiry of any of the large producers of machine tools will show that that part of their production intended for electric drive is a very small percentage of the entire output. The belt drive has not become obsolete as yet, nor is it universally considered a relic of clumsiness introduced because nothing better presented. In our worship of the new god we are very apt to overlook excellent attributes of the old one.

To turn every wheel in a shop without doing a stroke of work would require from 50 to 75 per cent. of the power of the engine, this power being consumed by the line shaft, belts, counters and mechanism of the tools themselves. This leaves 25 per cent. for useful work by the cutting tools. A considerable portion of this loss is directly traceable to the counters and their belts. Each item of loss is comparatively small and insignificant, but the aggregate is too large to be ignored. Such being the case it follows that any remedy to be effective must be applied to each individual counter and its belts.

It is probable, although we know of no tests that establish the point beyond dispute, that the loss is greater in the belt from the counter to the machine than in that from the shaft to the counter. At any rate the former gives more trouble than the latter and requires tightening much more frequently. To some extent this is undoubtedly due to one being vertical and the other horizontal. A newly tightened belt is always much too tight, the theory being that it will stretch and become of just the right tension. It certainly does stretch and at some point between the too tight and too loose periods it must be exactly right, but that condition is only maintained for an instant. The tight belt means loss of power in overcoming friction of the belt itself and the friction of the bearings. To maintain a belt at the precise tension necessary for the machine to take its heaviest cut is an impossibility.

More than one shop superintendent has studied the question of individual tighteners—one for each machine. The first objection is that this would add to the already crowded state of things aloft, would obstruct light and would introduce more bearings to be looked after. On the other hand, the belts could be kept nearer their best efficiency, their life would be increased and the periods of tightening would be less frequent. The yearly cost of each tightener, counting 10 per cent. of original cost for maintenance, would be less than \$10. The problem of the probable saving is a much more intricate one and embraces the time lost in relacing and the waste of power due to the too tight belt. We know of no figures available for this part of the calculation; but it seems evident that the items just mentioned would more than offset the cost of installation and maintenance. The convenience of operation would be greatly increased and the capacity of the machine also increased. From a mechanical point of view the contrivance need not be cumbersome, unsightly or very obstructive of light. The scheme has been tried successfully in isolated cases, but never, so far as we know, on a large scale.

Tonawanda, N. Y., at the foot of Lake Erie, has received 450,000,000 feet of lumber since the opening of navigation this season, and it is expected that the total receipts for the year will be in the neighborhood of 500,000,000 feet. This will be an increase of 100,000,000 feet over last year, when Tonawanda gained the distinction of being the largest lumber port in the country, taking the lead over Chicago.

The Autarith.

A New Calculating Machine.

Experimenting with means to assist the performing of arithmetical operations had its beginning in the abacus of the ancients. Subtraction and addition were the first operations attempted and as various investigators became more ambitious they sought to invent a machine for the more complicated operations of multiplication and division. The first calculating machine deserving the name was invented about 1642 by Blaise Pascal and about thirty years later Leibnitz brought out the first machine that was in any measure a practical success. It was capable of doing all four fundamental arithmetical operations but was somewhat complicated and laborious to handle. Most of the inventors since have taken their ideas from this machine and have been aiming to make it more entirely automatic and to reduce the possibilities of its making errors by slipping. The latest machine, which represents probably the greatest advance in the art of constructing calculating machines, is known as the Autarith. It is the invention of Alexander Rechnitzer of Vienna and has been perfected and is now made by the

To perform multiplication on the Autarith the multiplicand is set on the upper bank of buttons and the multiplier on the lower bank located in the fixed plate. By throwing the clutch lever at the left of the lower bank of buttons to the position indicated for multiplication the machine immediately starts and the sliding plate travels to the left, pausing for each vertical row of figures until the factor there indicated has been added the proper number of times and the corresponding button has returned to its zero position. When the last button has been so returned and the plate returns to the right the answer is given on the numeral wheels at the top of the sliding plate. After recording the answer, if it is desired to prove the operation, the clutch lever may be thrown to the division position and the operation of division may be carried through when all of the numeral wheels should be returned to zero and the upper buttons to the position they originally occupied when the problem was first set.

Division is the most interesting operation on the Autarith. The dividend is set on the numeral wheels either by revolving the wheels with the thumb or by setting the number on the lower bank of keys and throwing the clutch to the addition position, which causes the dividend to be set on the numeral wheels. The machine is

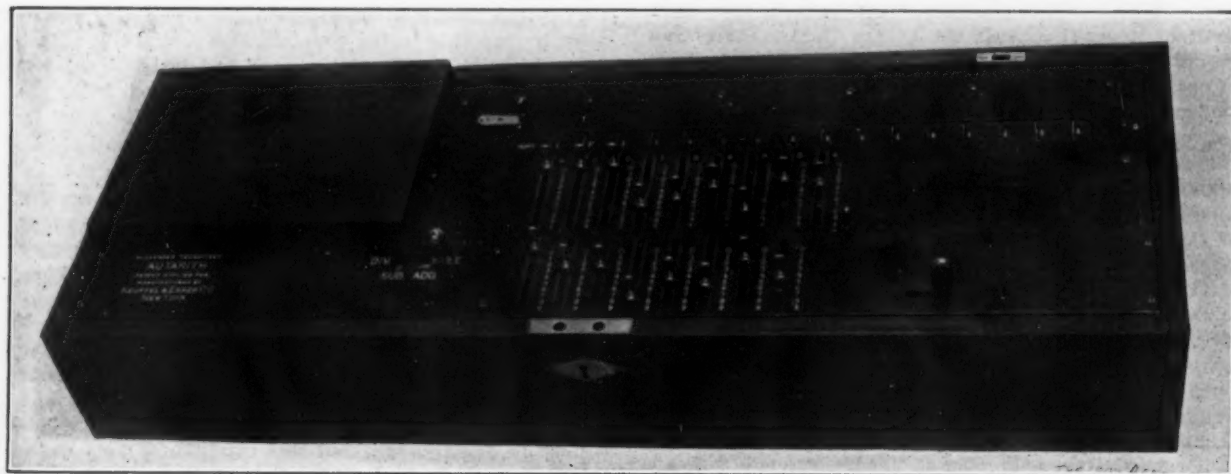


Fig. 1.—The Autarith, a Machine for Adding, Subtracting, Multiplying and Dividing, Made by the Keuffel & Esser Company, New York.

Keuffel & Esser Company, 127 Fulton street, New York City.

Fig. 1 shows the machine in its containing box with the cover removed and Figs. 2 and 3 show views of the interior mechanism with the top cover plate removed. Some idea of the multitude of mechanical parts which enter into the machine may be had from the latter two engravings. The machine appears much more complicated than many of the machines with which we have been familiar in later years, due principally to the fact that it aims to overcome the necessity of any manual operation other than indicating to the machine the example to be performed. It is beyond the intended scope of this article to go into a description of the mechanism of the Autarith in detail, but it will perhaps be interesting to indicate briefly what the operator is required to do in using it.

As viewed in Fig. 1 all of the parts may be seen with which the operator is concerned. The upper bank of keys or buttons and the numeral wheels directly above it are located in a plate which slides to the left and returns to its initial position when each operation is performed. The small lever on the fixed plate above the sliding plate and near the left end of the numeral wheels is used for returning the wheels to their zero position. In other words it is the "canceling" key. All of the operations simulate the processes as ordinarily carried out on paper and are reduced to the fundamentals of addition and subtraction, multiplication being the addition of one factor to itself a number of times, equaling the other factor, and division the subtraction of the divisor from the dividend until a remainder less than the divisor is left.

then ready to divide this number by any divisor that may be indicated on the lower buttons. When the clutch is thrown to division the machine "tries out" each line of figures and the upper buttons, one by one, come down a unit at a time with each subtraction of the divisor until the remainder is less than the divisor. In each case the machine attempts one more subtraction, just as in the mental operation of "trying out" the quotient, and when it finds that the divisor will not go again the indicator at the left under the canceling lever shows the word "wrong" and the machine automatically adds on the divisor once. Moving to the next place the machine proceeds as above and continues until all of the possible places have been used. The quotient is then shown by the position of the upper buttons, which may be quickly read in the holes just above them, and the numeral wheels show the remainder.

While the machine may be used for simple addition and subtraction it is more particularly intended for multiplication and division, as it is not very rapid in the adding of small numbers in quantities. If the numbers have several places it is then fairly economical in the time required to make the summation. The operation is performed entirely on the lower bank of keys by setting each number successively and throwing the clutch to the addition or subtraction position.

The lever shown at the right of the lower buttons is used for starting and stopping the small electric motor which provides the drive. The machine shown in the illustration is capable of automatically multiplying any two numbers from one figure each up to eight figures each, giving a product up to 16 places; of dividing any

number of 16 figures or less by any other number of eight places or less, and of adding and subtracting numbers up to eight places. The numeral wheels, on which the results appear for all operations except division, are placed close together so that the answers may be read rapidly.

One of the specially commendable features of the machine is the provision of safeguards against all accidents due to careless manipulation. When one set of gears and mechanism is in action all of the others are locked so as to prevent any slip or error. The carriage is securely held upon its ways by guides and rollers and cannot raise and slip a tooth no matter how large the operation. By eliminating such errors as might occur by the slipping of friction connections the only way in which it is possible for the operator to make a mistake is by failing to set the example correctly at the outset.

The field of usefulness of the Autarith is very wide,

neering, the subjects covering electrical work, ship-building, municipal engineering, gas works and gas machinery, locomotive building, mining machinery, machine tool manufacture, &c. Arrangements are being made for the reading of lectures before the chambers of commerce, engineering and other associations, universities and technical institutions in the following places: New York, Philadelphia, Brooklyn, Hoboken, N. J.; Minneapolis, Chicago, Portland and Eugene, Ore.; Baltimore, Paris, Bordeaux, Havre, Berlin, Vienna, Budapest, Trieste, Rome, Brindisi, Liège, Antwerp, Stockholm, Christiania, Copenhagen, Warsaw, Odessa, Lausanne, Yokohama, Tokio, Osaka, Kobe, Rio de Janeiro, Sao Paulo, Ouro Preto, Montevideo and Buenos Ayres.

Unprecedented Values of Farm Products.—Secretary of Agriculture Wilson gives an imposing array of figures in his annual report to indicate the enormous

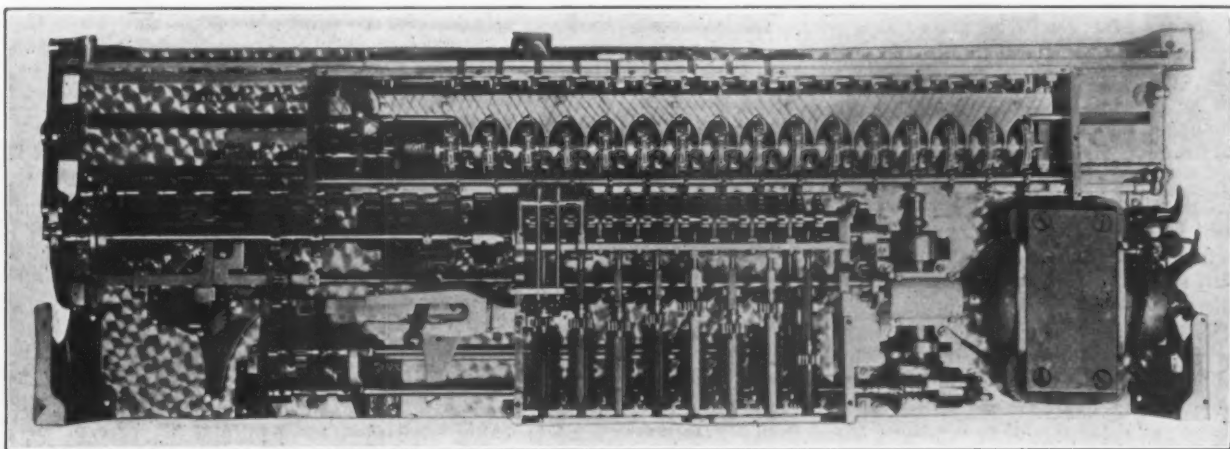


Fig. 2.—A Bird's-Eye View of the Mechanism of the Autarith.

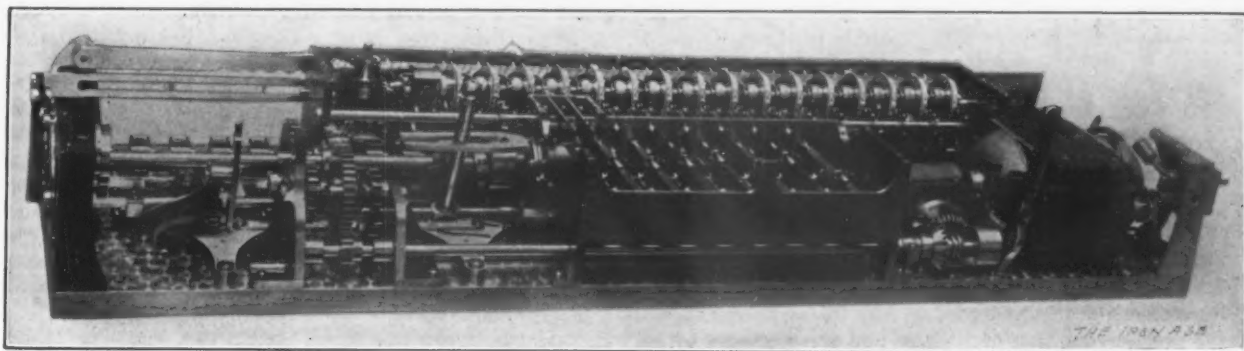


Fig. 3.—The Interior Parts as Seen from the Front.

as, one can readily appreciate, knowing that it is capable of any purely arithmetical computation. For engineering companies, railroad auditing offices, contractors, manufacturers, banking houses, government bureaus and life insurance companies it is a great time and labor saver, relieving continued mental exertion and insuring perfect accuracy, both of which are considerations of great importance.

British Manufacturers and Foreign Trade.—British trade journals refer to the progress made in the work of the Manufacturers' Association of Great Britain. It is stated that a majority of the engineering and iron and steel manufacturing companies in Great Britain are supporting the movement and that the Government has promised a substantial grant if a fair proportion of the manufacturers of the country become members. A main object of the association is to disseminate information concerning British products in all possible outside markets. In line with this plan lectures on British progress in engineering and in manufacturing lines are being prepared and these will be read at various points in other countries. The first series deals with engi-

wealth produced by the farming community in the United States this year. Farm crops have never been harvested at such a high general level of production and value. Corn reached its highest production, over 2,700,000,000 bushels, estimated at \$1,216,000,000. Hay is second, with a value of \$605,000,000. The cotton yield is put at \$575,000,000. The wheat crop of 684,000,000 bushels, following a short crop in 1904, is valued at \$525,000,000, the highest ever reached. Corn, hay, wheat and rice crops all reached their highest value this year. The dairy products for 1905 are estimated at \$665,000,000 and poultry products at \$500,000,000. Farm production of wealth in 1905 is put at \$6,415,000,000, an increase of \$256,000,000 over last year and the greatest amount ever attained by the farmers of this or any other country. In the last fiscal year exported domestic farm products were valued at \$827,000,000, which is below the average for the five years preceding.

The stockholders of the South Baltimore Car & Foundry Company, Baltimore, Md., have approved the recommendation of the directors to increase the capital stock by \$500,000.

Lake Iron Ore Notes.

Shipments Exceed Expectations.

DULUTH, MINN., November 25, 1905.—It begins to look as though shipments from the upper lakes would amount to 34,000,000 gross tons, providing weather conditions remain favorable for two weeks. The exceedingly warm and pleasant weather of November has made a great difference in shipments from the western part of the lake, and the three railroads covering the Mesaba and Vermilion ranges may roll up a total of not less than 22,000,000 tons. The Duluth, Missabe & Northern, one of the United States Steel Corporation's lines, has passed 750,000 tons for November and is sure to make better than 1,000,000 tons for the month, which is far above any November record for any one road on the lakes.

The Hibbing District.

The greatest activity on the Mesaba range is at and near the village of Hibbing, from which more than 9,000,000 tons of ore will be moved this year. Of this vast amount the Steel Corporation alone will ship about 5,000,000 tons. These mines are under the immediate direction of P. Mitchell as manager and W. J. West as assistant manager and are divided into four groups, according to locations. The largest shippers of the corporation in the district are the Burt and an adjacent 40-acre tract belonging to the State school funds, and from the two there will be moved this year about 1,750,000 gross tons. This will make the mine, as both are included in the Burt, the largest shipper in the State aside from the Mountain, also a Steel Corporation property, 18 miles east. The Burt was a shipper in a small way from underground workings up to three years ago, but has since been stripped for open cut mining. Continued stripping for three years has now uncovered an ore body 1200 feet long and about 300 feet wide. More than 12,000,000 cubic feet of earth and other overburden have been removed during the time. Stripping is still in progress and will be continued through much of the winter. It is the intention that stripping shall be extended north, widening the area, for some time to come, and the importance of the mine as a producer is far from its maximum. It would be not at all astonishing if it should produce better than 2,000,000 tons in 1906.

A short distance east of the Burt is the Morris, also of the Steel Corporation. This property was not a shipper till late in the summer of 1905, though it had been partially developed by stripping the year before. It holds the world's record for a new mine and is a sample of the rapidity with which a Mesaba mine can be brought into operation. Its product this year will not be less than 1,000,000 tons. This mine has been developed along the lines of engineering adopted by the Oliver Company, and the precise condition of its ores and the tonnages of various grades that could be produced at varying depths were all known before the first shovel was installed at the pit.

The third great property of the corporation in the Hibbing district is the Monroe-Tener, which is making its first shipment this year. This is an enormous ore body which is being developed for both underground and milling mining, and its shipments for the year should be about 100,000 tons, all of which has been coming out of drifts and crosscuts. No stoping has yet been done. For three years this mine has been in progress of development and another year will be required to see the extensive plan carried out commensurate with the importance of the mine. There are three shafts down and a very large pumping plant is being installed on the 325 feet level of Monroe A shaft. A large area south of two shafts is being stripped, and the milling process of mining will be employed there. A large part of the mine will be operated by caving. Complete electrical tramming systems have been installed underground, and the main drifts were planned before development commenced with the view to the most systematic and economical handling of ore underground. It is said that the development of this mine will cost not far from \$2,000,000. It will be a considerable producer in 1906.

The Hull-Rust mines, which cover a mile in length and are south of parts of the Mahoning ore deposits that

have not been opened, are being developed as open cut mines, and all the past summer stripping has been under way on an extensive scale by the Oliver Company direct without the intervention of contractors. It will be continued as far through the winter as may be profitable and a large tonnage will come from the shovels the next year. These two mines have produced from underground this season about 500,000 tons, much of which was from stocks.

Pillsbury mine, also belonging to the Steel Corporation, was the original discovery at Hibbing and has been a shipper since 1897. It is being changed from an underground to an open cut mine and its production for 1906 will be by steam shovel. For this year it has produced about 150,000 tons. Glen, Clark, Sellers, Chisholm, Myers and St. Clair mines, all of the Steel Corporation, have produced from 300,000 to 60,000 tons for the last named, a total of about 1,300,000 tons. Myers is a new mine, the rest of a few years' development.

Other mines of the Hibbing district include the Mahoning, with an average shipment of 1,000,000 tons; the Stevenson, which will produce about 1,500,000 tons; the Leetonia, Cypress, Agnew, Utica, Jordan and others, whose season shipments should make the total from Hibbing about 9,000,000 tons. The district is served by the Duluth, Missabe & Northern and Great Northern railroads, the former handling nearly all the mines of the Steel Corporation, the latter most of those outside. It is an astonishing fact that in the 7 miles of the Mesaba range, of which Hibbing is the center, there originates more than one-fourth of the entire product of Lake Superior's 120 mines.

General Notes.

The Standish ore deposit, lying just east of the village of Hibbing, has been sold to a Cleveland mining interest for about \$325,000. It is a 25-cent lease, and the mine contains 4,500,000 tons of 56 and 57 per cent. ore, largely non-Bessemer. The price this lease has brought is an emphatic reminder of the way ores increase in value, for a year ago it could not have been sold for \$100,000. Indeed, it and other better properties were then offered for that sum and less and found no takers.

The Oliver Iron Mining Company has acquired possession of the New Davis mine, east of Ironwood, Gogebic range, and is to sink a deep shaft there to open its Geneva and other properties lying north of the New Davis. This shaft is to be steel lined and will be in the footwall some distance back of the vein. Adjoining the New Davis on the west is the Newport-Bonnie of the Schlesinger interest. This mine has just decided to install a 150-kw. generator and eight locomotives for underground tramming, though as yet no orders have been given. The plant will be one of the largest yet placed underground.

On the Menominee range the drill explorations at old Saginaw mine, under way by Longyear & Hodge, are showing good ore for a considerable depth, being still in ore. It is a Bessemer grade and looks like a large deposit. Nanaimo mine is shipping this year about 100,000 tons, which, for a property that was thought of no value, is pretty good. Old Breen mine, which has been pumped out, is now being developed by a large force. Bristol mine is increasing its product this year to 300,000 tons, which is 70,000 tons above 1904. At the Ludington C shaft of the Chapin mine they are now down 1250 feet, after a trifle more than two years' work. The excavation for the foundation of the great Cornish pump which is to be utilized at that shaft is about completed, and the work of erecting steel buildings and steel shaft house will be carried out in the spring.

Cole & McDonald, Duluth diamond drill operators, now have about 50 drills running in the Lake Superior region. This is an indication of the activity in the exploration field at present. Of these drills several are employed on the Vermilion range, near Tower, several on the new Deerwood district, west of Duluth, several at Baraboo, and the rest at Negaunee, Crystal Falls, Amasa, Quinnesec, Iron River, all Menominee points, and two close to Houghton. Other drill men are very busy. There are understood to be more than 200 diamond and churn drills now at work in the Lake Superior country for iron alone.

D. E. W.

High and Low Blast Pressures in the Cupola.*

BY WILLIAM H. COLEMAN, CHICAGO.

Among the traditions handed down to us in foundry work, the high pressures deemed so essential years ago by reason of the small tuyere area and low cupolas are still adhered to by many who think the air must be discharged into the cupola with great force. Tuyere area has been increased from time to time, yet it is still believed by many of our older foundrymen that nothing but high pressure through small tuyeres will carry the air to the bed of fuel. However, the excessive pressures advocated by some as a means of getting increased capacities in cupolas are not employed by modern foundrymen. From a cupola builder's circular is taken the following table giving the highest maximum pressures usually obtainable together with capacities:

Diameter inside lining.—Inches.	Tons melted per hour.	Pressure in ounces.
18.....	¼ to ½.....	8
23.....	¾ to 1.....	10
27.....	1 to 2.....	10
32.....	3 to 5.....	12
37.....	5 to 6.....	12
42.....	6 to 7.....	12
45.....	7 to 9.....	14
48.....	9 to 10.....	14
54.....	10 to 12.....	14
60.....	12 to 14.....	16
66.....	14 to 18.....	16
72.....	18 to 21.....	16
78.....	21 to 24.....	16
84.....	24 to 28.....	17

Very few modern foundrymen, even among users of positive blowers, care to utilize such high pressures for several reasons. 1, They find they can get their required capacities at the lower blast pressures; 2, the cupola lining will last longer under lower pressures; 3, oxidation of the silicon and manganese is greater under the high pressures, and this is only compensated by paying more for high silicon grades; 4, the resultant castings are smoother and easier to machine when made under the lower pressures; 5, there is less liability to slag under the lower pressures; 6, greater strength in castings is obtained in melting by the lower pressures; 7, the horsepower required per ton melted is less at low pressures than at high pressures.

A Large Melter Favors Low Blast Pressure.

Among the foundrymen who, under the direction of their chemists, have been reducing their pressures from time to time, it is significant that a company in Chicago operating the largest number of cupolas, as well as the largest in size, is the firmest believer in low blast pressures. It is now installing two cupolas of 84 inches inside diameter and a centrifugal fan blower to give 24,000 cubic feet of air per minute at 10 to 12 ounce pressure in the wind box of the cupola. The great fluidity of the iron, the quality of the castings produced, together with the capacities and low horse-power per ton of iron melted, certainly seem to prove the claims for low blast pressure. The large tuyere area together with the ample

low pressures a liberal volume of air is equally important. Many foundrymen are using blowers whose ordinary capacity is far below the required volume; therefore they are compelled to speed up their blowers in order to get the necessary volume and thereby get incidentally higher pressures than are essential, with poor results in product and rapid destruction of cupola lining. Even with limited cupola capacity the loss in melting capacity at the cupola with low pressures is more than made up in the machine shop. Low pressures produce a soft casting easy to machine, since there is less loss of silicon and manganese by oxidation. For the same reason higher strength is obtained under low pressures, as has been proven by Government tests at Columbus, Ohio, and by others elsewhere.

Volume a Function of Size and Melting Ratio.

It has been found that the volume of air required to melt a ton of metal per hour depends upon the size of cupola and the ratio of coke to metal used in melting. In a cupola air is blown over the melted metal, not through it. The oxidation of carbon is slight and incidental, not fundamental and complete, as in a converter when air is blown through the metal. The following volumes are approximately correct for air required per ton melted per hour:

6 lbs. iron to 1 lb. coke, 33,000 cubic feet air per ton per hour.
7 lbs. iron to 1 lb. coke, 31,000 cubic feet air per ton per hour.
8 lbs. iron to 1 lb. coke, 29,000 cubic feet air per ton per hour.
9 lbs. iron to 1 lb. coke, 27,000 cubic feet air per ton per hour.
10 lbs. iron to 1 lb. coke, 25,000 cubic feet air per ton per hour.

To get a greater volume at the same pressure requires a larger size pipe. It is therefore apparent that increased tuyere area and properly proportioned supply pipe and ample area in the wind box are desirable for low pressures. Inversely, when the former are too small higher pressures are required to obtain the volume necessary. Now, having a cupola of sufficient capacity with a total tuyere area equal to 20 per cent. of the circumferential area measured inside, and with the blower delivering the required volume through a pipe whose area is not less than one-third of the combined tuyere area and a proportional area of wind belt, we can get ideal conditions for using low pressures, particularly if the tuyeres are properly placed for the product desired. We would then have the melting capacity shown below:

Inside cupola diameter.—Inches.	Capacity per hour.—Tons.	Pressure in ounces.
18.....	¼ to ¾.....	5 to 7
23.....	¾ to 1.....	5 to 7
30.....	2 to 3½.....	6 to 8
35.....	3 to 4.....	7 to 8
37.....	4 to 5.....	7 to 10
42.....	5 to 6.....	7 to 10
45.....	6 to 7.....	8 to 10
48.....	7 to 8.....	8 to 10
54.....	8 to 9½.....	9 to 10
60.....	10 to 12.....	10 to 12
66.....	12 to 15.....	10 to 12
72.....	16 to 18.....	10 to 12
78.....	19 to 22.....	12 to 14
84.....	21 to 24.....	12 to 14

From a number of cards showing low pressures and representing the practice of some of our best foundry-

Table III.—Results of Tests with Low Blast Pressures in Foundry Cupolas.

Test.	Inside diameter. Inches.	Time. Hours.	Capacity. Tons.	Melting ratio.	Blower.	Pressure. Ounces.	Average horse-power per ton per hour.	Scrap. Per cent.	Castings.
6	42	1½	10	6 to 1	Fan.	7½ to 10	2.25	0	Small soft.
11	45	1½	12	10.8 to 1	Fan.	6½	1.70	50	Medium soft.
12	60	2	14	5.6 to 1	Fan.	9	4.21	50	Heavy engine.
15	48	1½	9	8 to 1	Fan.	12	3.66	50	Light stove.
23	48	1½	7	7 to 1	Fan.	11	2.5	50	Light stove.
24	60	1½	13	7 to 1	P. B.	8 to 11	4.86	20	Light stove.
46	40	1½	6½	7 to 1	P. B.	8 to 13	...	30	Medium soft.
49	72	2½	22½	8.9 to 1	P. B.	4 to 6	3.41	..	Sewing mach.

area of blast supply pipe is an important and valuable feature of this installation.

Many foundry men have found it desirable to increase tuyere areas all the way up to 25 per cent. of the area of the cross section of the cupola. In connection with

* Abstract of a paper read before the Philadelphia Foundrymen's Association, November 1, 1903.

men the figures in Table 3 are taken, representing different classes of work and both fans and pressure blowers.

Running a blower, particularly of the centrifugal fan type, beyond its volume capacity and thereby producing excessive pressure by reason of too small a blower and decreased tuyere area I consider the most grievous fault in cupola practice.

Dynamometer Tests of Water Wheels.

The testing of water wheel installations to determine if the full efficiency of the fall is developed and if the turbines are up to contract specifications is an important part in hydraulic engineering. The value of water as power has been more apparent since it became commercially practicable to convert the power into electric current and much attention is now given to seeing that none of this power goes to waste. Charles M. Allen, who is in charge of the experimental work in mechanical and hydraulic engineering at the laboratories of the Worcester Polytechnic Institute, Worcester, Mass., has recently made a number of successful tests of hydraulic power units of large capacity, including one of 2100 horsepower, employing for the purpose the Alden absorption dynamometer invented by Geo. I. Alden, who was for many years head of the department of mechanical engineering at the Worcester Institute. This system of test-

and between the outer plate at either end and the wall of the housing. The water pressure is regulated by an automatic valve. Another system of piping circulates oil for lubricating the surfaces of the copper plates next to the revolving disks. The oil, which in the large machines is impelled by a pump mounted on the housing, enters the chamber at the circumference and is forced along radial grooves of the disks to the hub and completes its circuit through hose connections to the pump.

When the dynamometer is in use water passes through the chambers of the housing and between the several units of plates and disks and by its pressure tends to force the plates against the sides of the revolving disks. This pressure increases the friction between the disks and plates and offers resistance to the rotation of the disks. The construction resembles that of a constantly slipping friction disk clutch. The resistance to turning imposed by the friction plates and disks is balanced by the weighing apparatus.

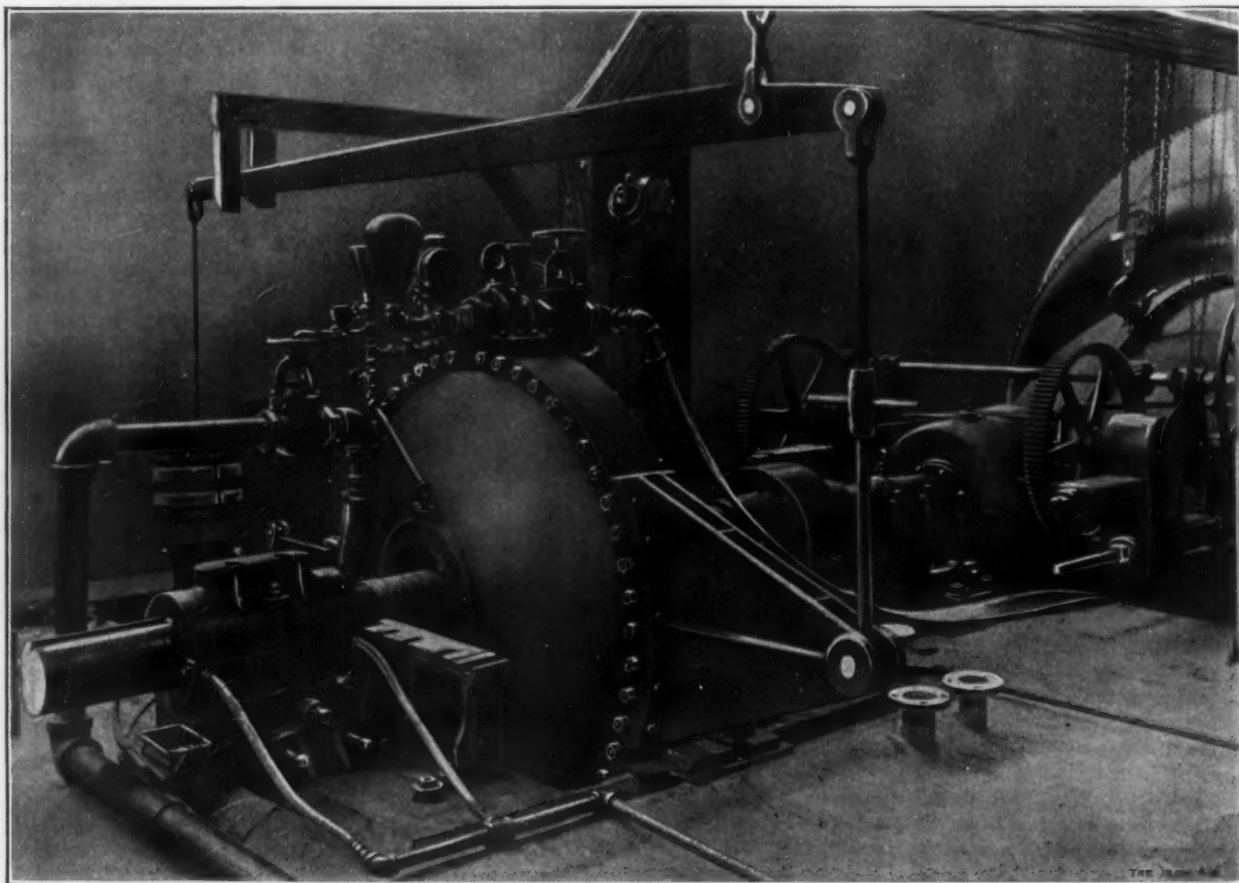


Fig. 1.—A 60-Inch Alden Absorption Dynamometer, Rated Capacity 1500 Horse-Power at 100 Revolutions per Minute.

ing is interesting because it has proved that it is practicable to accurately measure a large amount of power by an absorption dynamometer.

The energy is converted into heat generated by friction in the dynamometer and is carried away in the cooling water, while the load is measured in pounds. It is believed to be perfectly feasible to measure much larger units than 2100 horse-power, the capacity of the dynamometer being limited only by the number and area of the friction disks through which the energy is absorbed.

In principle the Alden dynamometer is not new, being in a general sense an adaptation of the Prony brake developed to a point where it may be used for measuring the heavy loads of large water power plants. The essential parts are several smooth circular revoluble cast iron disks, keyed to the shaft which transmits the power; a non-revoluble housing having its bearings upon the hubs of the revolving disks, and a pair of thin copper plates in contact with each cast iron disk, the plates being integral with the housing. Through a system of piping water under pressure is circulated through chambers between each unit, consisting of a disk and its copper plates,

The power transmitted from the unit under test tends to rotate the housing, which tendency is counteracted by the weights. The housing is kept from rotating beyond prescribed limits, while the balance is being obtained by stops on either side of a lever arm bolted to the housing. The weighing apparatus by which the power absorbed is measured is delicately adjusted on knife-edge bearings. There are two sets of scales, which may be called the outside and inside scales. The outside scale indicates 1 horse-power for 1 pound weight per 100 revolutions per minute. The inside scale indicates 1 horse-power for 10 pounds of weight per 100 revolutions per minute. The outside scale serves not only to assist in balancing the load—that is, to weigh it—but also to take the weight of the housings off from the bearings on the hub of the revolving disks.

Engineers who have witnessed this method of testing have at first wondered that so small an apparatus could absorb 2000 horse-power. It is explained by the fact that power converted into heat gives a relatively small number of heat units. The dynamometer which absorbed 2100 horse-power. has four 60-inch disks, the friction

being obtained through eight copper plates of the same diameter. The diameter of the housing is but $5\frac{1}{2}$ feet and its thickness at the hub is 2 feet. It was possible to stop the 2100 horse-power turbine under a full head of water by slightly augmenting the friction in the dynamometer by increasing the pressure of water. Water passed through the chambers at the rate of about 500 gallons per minute was raised in temperature only about 20 degrees. A heat unit corresponds to 772 foot-pounds of energy and there are 33,000 foot-pounds to a horse-power; therefore 2100 horse-power is equivalent to 89,767

tracted tests the automatic valve is preferable. The best results are obtained when the temperature of the water passing through the chambers is quite low, because it prevents too free flowing of the heavy cylinder oil employed and contributes to the better absorption of the heat of friction. The dynamometer shown is rated at 1500 horse-power at 100 revolutions, which easily gives 2000 horse-power at 200 revolutions.

Accurate knowledge of the efficiency of a turbine unit with various gate openings when operating under actual conditions surrounding its permanent setting is very de-

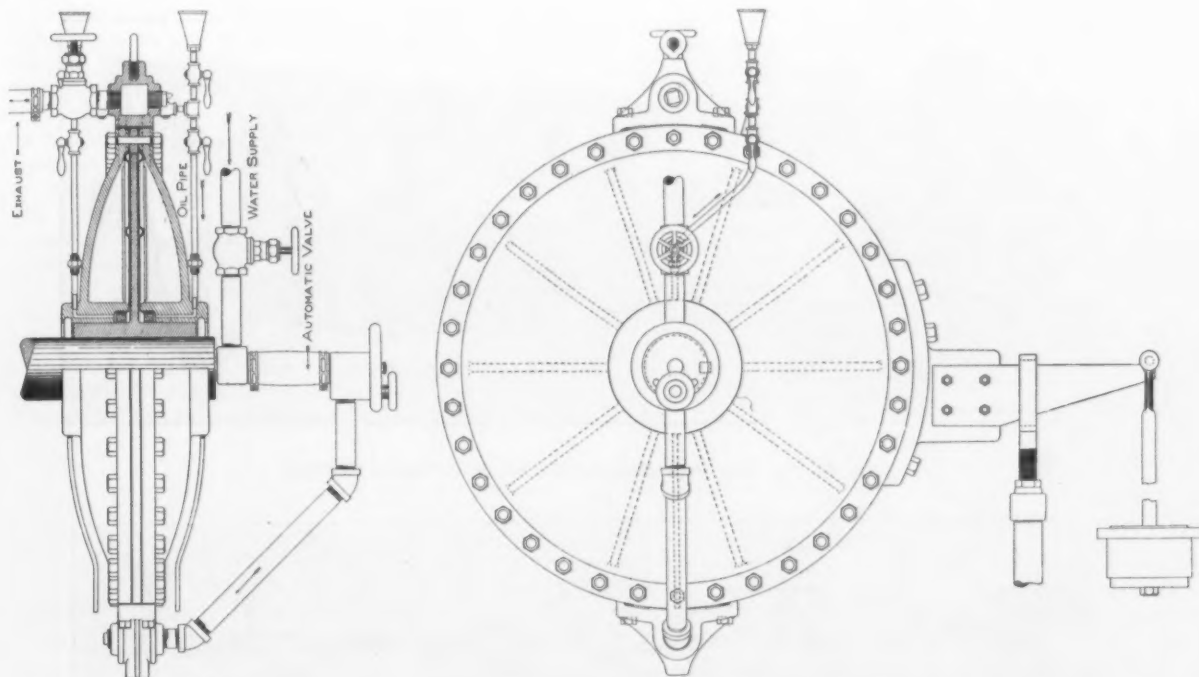


Fig. 2.—Details of a Single Disk Alden Dynamometer.

heat units, which would raise the temperature of 500 gallons of water $20\frac{1}{2}$ degrees.

Fig. 1 is from a photograph of the dynamometer set up for testing a large turbine unit. Fig. 2 gives details of a single disk machine of the same type having the general principle of the larger apparatus, the difference being chiefly in the number of disks employed. The larger type dynamometer has two lever arms bolted to

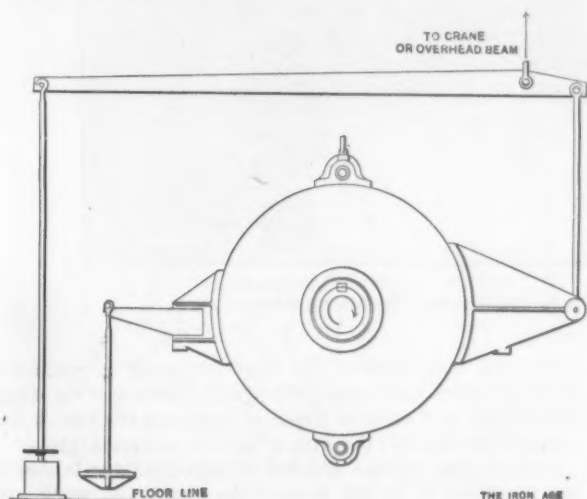


Fig. 3.—Diagram of the Scale Arrangements on a Large Dynamometer.

the housing to prevent the tendency to rotate beyond the desired limits in either direction, as indicated in Fig. 3. In the larger sizes the automatic valve for regulating the water pressure may or may not be used. If not used the pressure is regulated by the operator, but in pro-

sirable as a guide to the best operation. The mere testing of the turbine, however, is only a part of a complete test of water power. To ascertain the total efficiency of a water power it is necessary to consider the head of the fall and the volume of water. Given these two quantities the dynamometer will tell whether the turbine installation is giving the full 80 per cent. of the theoretical efficiency of the water power, which is the standard of excellence.

Electrical engineers have succeeded very well in ascertaining the efficiency of turbine wheels in hydraulic electric stations from the readings of the electric instruments used, but there is dispute as to whether such tests should be accepted as final. It is claimed that the Alden dynamometer method is absolute in that the power is literally weighed, the only limits to accuracy being human skill in measuring the distance between the knife bearings of the weighing apparatus and the speedometer, which gives the number of revolutions per minute of the turbine shaft.

British manufacturers of plates and angles, according to the *London Iron and Coal Trades Review*, are now getting advanced prices which "enable them to make a satisfactory profit notwithstanding the increased cost of pig iron. There is every indication that the prosperity in these branches will continue, as work is still plentiful in the shipbuilding yards and their requirements are increasing. Not only are British makers supplying large quantities of this class of material to the yards in this country, but they are also competing successfully with German manufacturers in meeting the requirements of German shipbuilders. The exports to Denmark are also considerable. The quotation for steel ship plates is now £7 per ton, and this figure does not appear to have checked the demand in any appreciable degree."

The Prentice Multiple Spindle Automatic Turret Machine.

The multiple spindle automatic turret machine built by the George G. Prentice Company, New Haven, Conn., is intended for boring, turning, drilling, reaming and threading small castings, forgings or pieces that have been finished on one end in a rod machine and require operations on the reverse end. The machine differs widely from other types of tools for similar work. It is made in four standard sizes, of which the smallest has three

position, at which time the operator removes and inserts the work.

Before starting the machine the operator places an unfinished piece of work in the upper section. The chuck indexes around automatically, bringing the piece of work in line with the tool in the first spindle at the front of the head. As the work advances the operator supplies an unfinished piece as another section of the chuck comes uppermost, until four spindles are simultaneously performing their operations. When the first piece has come around to the top of the chuck the operator removes it, replacing it with an unfinished piece. Thus the work pro-

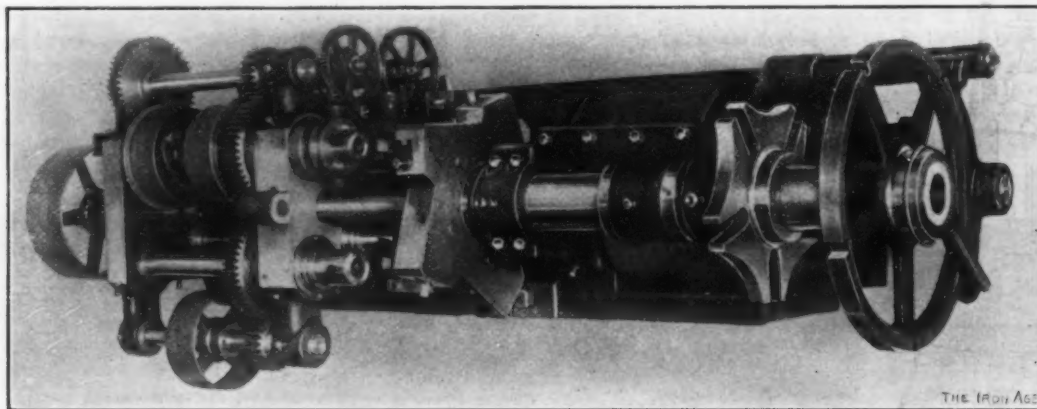


Fig. 1.—Top View of the Four-Spindle Automatic Turret Machine.

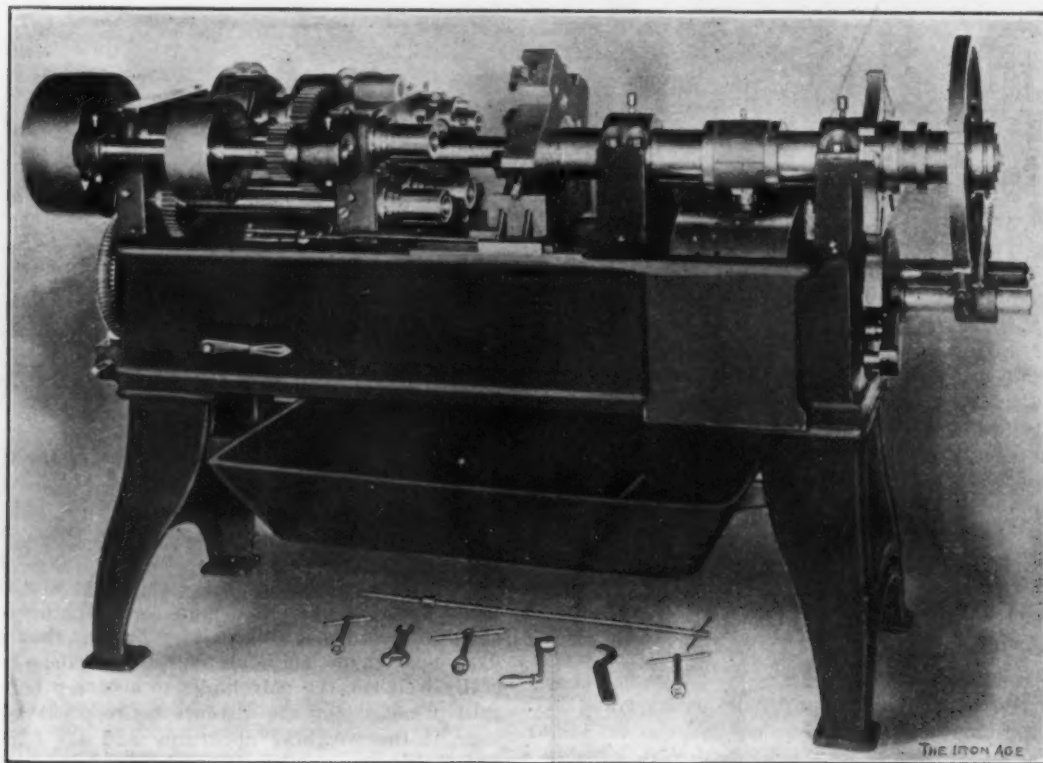


Fig. 2.—Front View of the Prentice Four-Spindle Automatic Turret Machine.

spindles and the others four spindles, as shown in Figs. 1, 2 and 3.

The spindles, each carrying a tool for a different operation, revolve and the work is automatically indexed and fed up to the tools by means of a cam strip on a feed drum, the length of the longest cut required on any piece determining the angle of the cam. The cutting feed is obtained from the third or fourth spindle through change gears to a feed shaft at the back of the machine and through miter and worm gears to the cam shaft. For different work the feed can be quickly changed by substituting a gear of the correct number of teeth for the one on the feed shaft. Facing the spindles is a chuck with five distinct sections or sets of jaws, as shown in Fig. 4. Each section is in line with a spindle except when in its upper

position, the only duty of the operator being to replace a finished piece each time the chuck indexes. On large brass work and on most kinds of iron and steel work one operator is able to take care of two or more machines.

The saving of time effected by this machine is due to the fact that it is not stopped to chuck the work and that all operations on any piece are finished complete in the time ordinarily required to perform the longest single operation. The method of camming is such that all the shorter operations on any piece are performed within the time consumed in finishing the longest. For example, if a piece of work is to be bored 1 inch deep and then faced, seated and threaded, and the boring is the longest operation, requiring, say, eight seconds, then after all spindles are working one completed piece is turned out

every eight seconds. Allowance must be made for time consumed in backing the chuck off from the tools and indexing and for sharpening tools, &c. As one-half the actual cutting time is said to be ample for this, such pieces may be finished at the rate of 300 an hour. The rate at which any kind of work can be produced in the machine is dependent of course upon the speed and feed per revolution at which different kinds of metal can be cut to best advantage. It is advantageous naturally to run the cutting tools at a consistently high rate of speed and feed, and the machine is designed to stand up to the demands of high speed steel tools, but the chief claim for high producing capacity is based on the number of pieces operated upon at one time rather than on high cutting speeds and feeds.

The feeding and indexing mechanism is of special interest, containing several unusual features. The feed drum D, Fig. 3, mounted upon the cam shaft A, advances and returns the turret. The turret consists of a barrel upon which is mounted a chuck, the barrel being fed by the yoke L, the movement of which is controlled by the cams on the drum. The barrel slides freely upon the bar K, which is fastened rigidly to the head, the bar acting as a guide to help steady the chuck. The steady bracket M is actuated by the cam C through a lever and link. The bracket slides on a V on the front of the bed and is fed forward when the chuck is ready for advancing toward the spindles.

The chuck has flat surfaces milled to the correct in-

permit the chuck to index. The turret barrel has mounted upon it a star wheel, P, for turning or indexing the chuck, and also a wheel, Q, with notches cut in its rim for locking the chuck in its correct index.

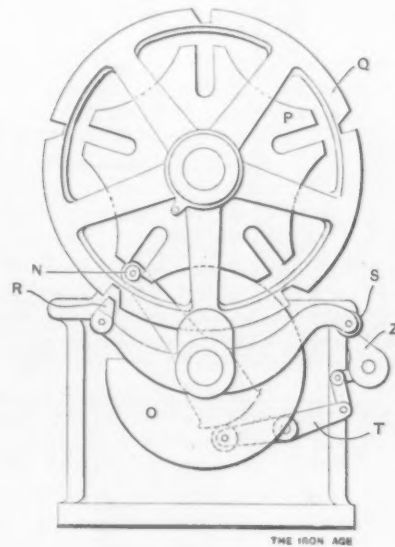


Fig. 5.—End View of the Indexing and Locking Mechanism.

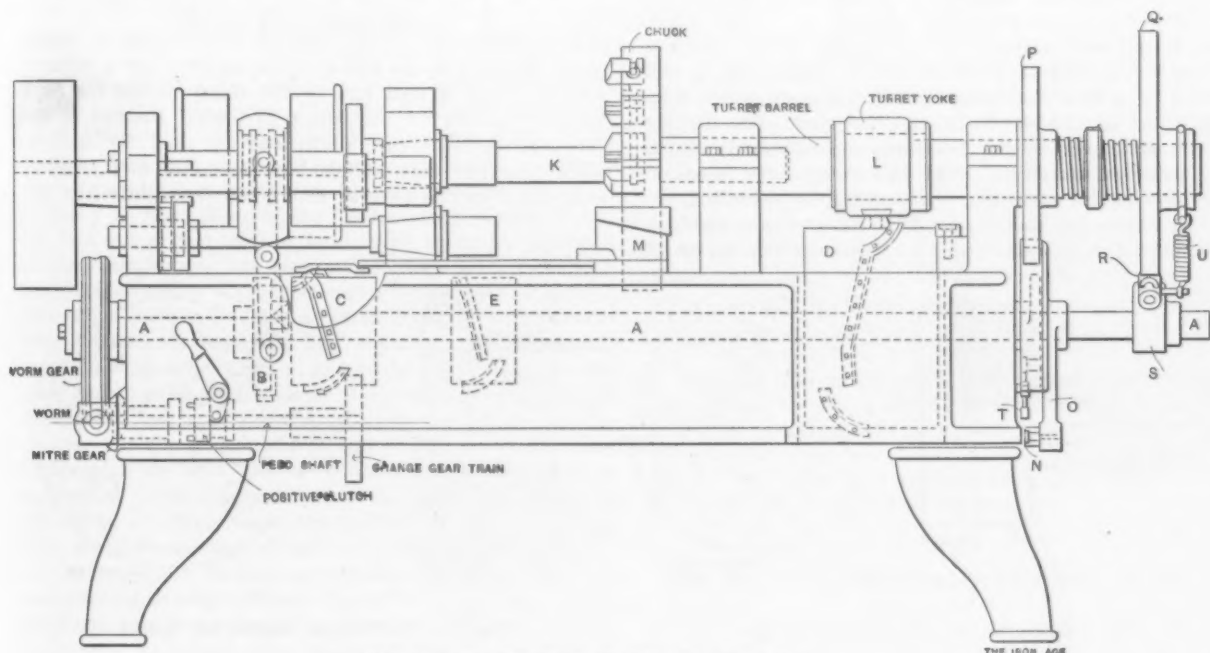


Fig. 3.—Line Elevation, Showing the Operation.

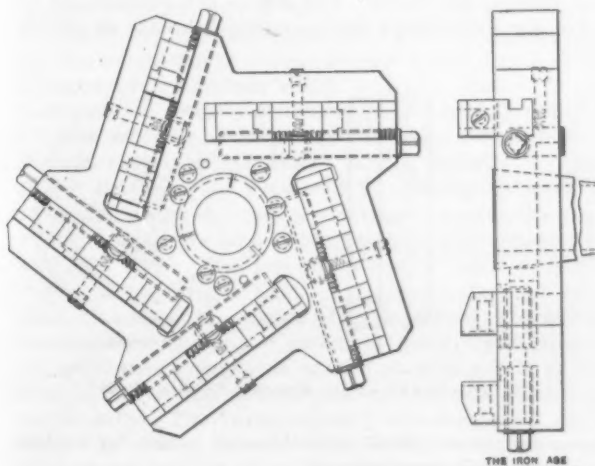


Fig. 4.—Details of the Sectional Box Chuck.

dex, as shown in Fig. 4, and the steady bracket holds it from turning under the strain of cutting. As the chuck recedes from the spindles the bracket is withdrawn to

The indexing mechanism is shown in Figs. 3 and 5. The locking pawl R is withdrawn from the index wheel Q by the lever S, leaving the turret free to be rotated by the star wheel P. This wheel is keyed to the turret barrel, is a sliding fit upon it and is operated through the arc of the index by the pinion O, which is fastened rigidly to the cam shaft and revolves with it at a constant speed. Upon an arm of the pinion is mounted a stud and roll, N. The roll being carried around with the pinion engages in one of the slots of the star wheel, causing the wheel to turn and indexing the chuck. The rim of the pinion O is in contact with the concave periphery of the star wheel between indexing periods and acts with the pawl R of the index wheel Q in steadying and locking the turret. On the side of the pinion O is milled a cam which moves the lever T and actuates the rocking cam Z, the lever and rocking cam being connected by a link. The movement of the rocking cam Z raises one end of the lever S and causes the pawl to be withdrawn from the slot in the index wheel. When the lever is released the Spring U, Fig. 3, draws the pawl back into its slot.

The drive of the cam shaft is from a pinion V, Fig. 6, secured to the forward friction pulley on the fourth

spindle, which is devoted to thread cutting mechanism. The reverse motion of the spindle is obtained by a clutch of the friction ring type. The sliding spool carries a

driving position and the reversing belt is removed. The chuck may be fed up by hand when adjusting tools to new work by turning a crank wrench on the worm shaft at the head of the machine.

The sectional box chuck shown in Fig. 4 has entirely independent two jaw sections which are opened and

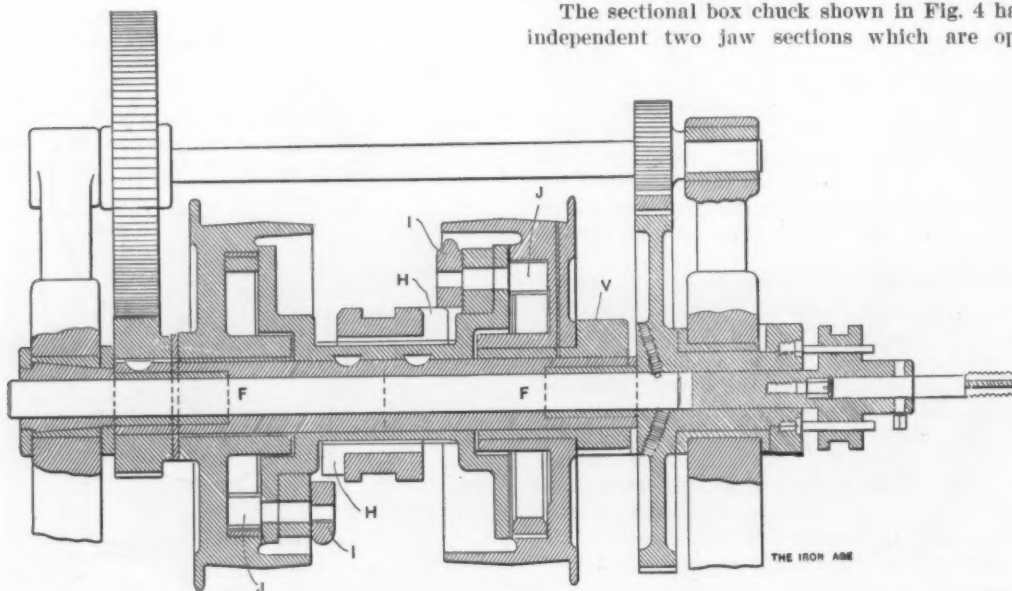


Fig. 6.—Detail of the Fourth Spindle, Showing the Cam Shaft Drive.

key II at either side which comes in contact with a screw in the end of a curved lever, pivoted at I, and causes it to turn slightly on the stud J upon which flats are milled to fit a slot in the friction ring. The turning of the stud expands the friction ring, making it clutch the inside of the pulley. The two pulleys are belted to run in opposite directions for driving or reversing the tap or threading tool. The drive of the cam shaft is transmitted from gear V, Fig. 6, through a series of

closed quickly by a right and left hand screw of coarse pitch, the ends of the screws being squared for a wrench. The jaws are shaped and drilled ready to receive false jaws or holders for any shape of piece. Instead of the chuck a sectional face plate may be used for holding work that has been finished on one end and requires operations on the reverse end. The face plate has five

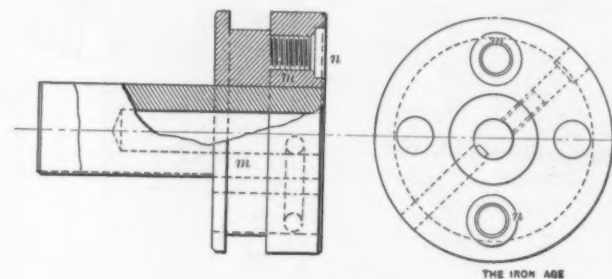


Fig. 7.—Detail of the Floating Tap Holder.

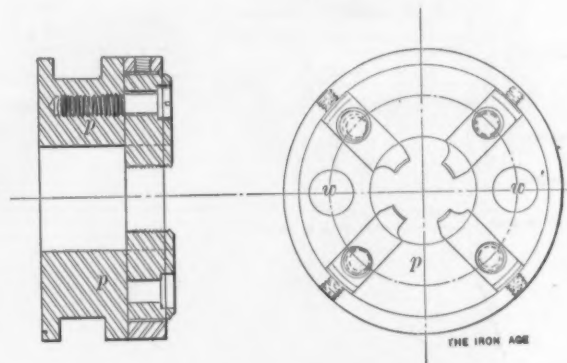


Fig. 8.—Detail of the Floating Die Holder.

change gears to a gear fastened on the feed shaft. Upon this shaft is mounted a positive friction clutch which may be thrown in or out by the handle at the front of the head of bed. The drive to the cam shaft is transmitted through this clutch. It will be noted that as the drive of the tapping spindle and of the feed are from the same

eccentric drawback arbors in positions corresponding to the jaws of the chuck. The arbors are threaded to receive any size of work having internal threads on the fin-

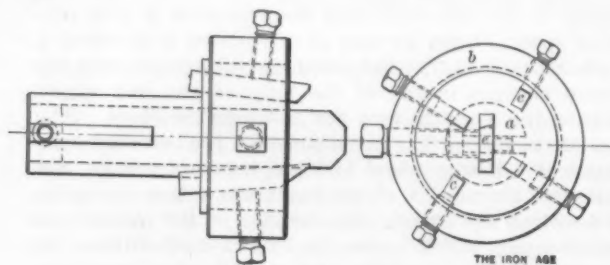


Fig. 9.—Detail of a Special Combination Tool.

belt any stopping or retarding in cutting threads will produce a corresponding effect upon the feed.

When an automatic opening die or collapsing tap is used the threading mechanism is locked in the forward

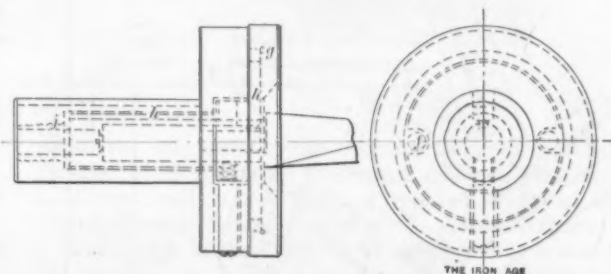


Fig. 10.—Detail of the Floating Reamer Holder.

ished end, or are fitted with threaded collets for holding work having external threads.

Among the special tools furnished with the machine is a floating die and tap holder for cutting two threads of different pitch simultaneously to one spindle, the tap being employed to cut internal and the die external threads. The floating tap holder, Fig. 7, is driven by two

pins fastened in the spindle collar, as shown in Figs. 1 and 6, which are sliding fits in holes in the tap holder. In the face of the tap holder two studs may be screwed in the holes *n* to fit into holes *w* in floating die holder, Fig. 8. In other words, the tap holder is carried on pins fastened in the spindle and the die holder on pins carried in the tap holder, both being free to move on the pins. The independent threading is accomplished by means of two levers, the tap holder and the die holder each having its lever, which are operated by separate cams on the drum E, Fig. 3, mounted on the cam shaft. The pitch of the cam strip determines the pitch of the thread.

Another special tool is the adjustable combination tool shown in Fig. 9. This consists of a central body *a*, which is split lengthwise and milled out to take a flat boring tool *c*. This central body has slots milled in its head at an angle with the face and in these slots cutters *c* are placed, held by set screws in ring *b*. The cutters are adjusted to diameter by moving them in or out from the face.

A third tool shown in Fig. 10 is known as the floating reamer holder. This consists of a floating holder *h* which is turned smaller than the corresponding recess in the shank *j*. The holder is bored out to receive the shank of the reamer. In the shank portion are two pins which loosely engage the holder to drive it. The holder is retained in place by the threaded cap *g*.

New Publications.

The Competent Life. By Thomas D. West, Sharpsville, Pa. 12mo. 245 pages. Publisher: Cleveland Printing & Publishing Company, Cleveland, Ohio. Price, \$1.25.

Mr. West is best known in connection with a number of volumes he has written on foundry practice and more recently as the author of the "Metallurgy of Cast Iron." He has put a vast deal of hard work upon the problems of the foundry and has been one of the most prolific producers of foundry literature in the country. The volume before us is entirely different from anything he has written. The author says that he "has no motive in presenting this work other than a sincere desire to influence for good the lives of all classes of workers." Drawing on his experience as an employer of labor he points out the reasons for the incompetency and ill success of so many workers in all lines. He considers incompetency to be a matter of very serious concern in connection with the industrial development of the United States. In stating that the nations most advanced in the use of machinery are to-day most in need of strong, intelligent laborers and efficient skilled workers, the author adds that clerical positions are overcrowded by persons who will not acquire skill in trades, with the result that "we are drifting entirely too much to the easy and clean collar and cuffs situations, and developing entirely too many seekers of leisure rather than of labor."

One of the plans advocated by Mr. West to make easier the acquisition of trades by young men is the establishment of institutions which will loan money on collateral or the security of bondsmen to aid in the support of those who are serving apprenticeships. Such a loan, he considers, need not exceed in the majority of cases \$250. Another plan advocated is the establishment of public information and employment bureaus, through which those out of employment could learn of employers who need labor. This last suggestion, it might be added, is now taking form in England in a proposition for legislation to reduce the number of unemployed. The author discusses the causes and extent of poverty and pauperism with strong emphasis on the baneful effects of the drink habit in the deterioration of workers physically and morally. The twenty-seventh and concluding chapter of the book is devoted to the benefits of cheap commodities secured not by cheap wages but by the highest efficiency of labor. A number of examples are cited of the increase in the cost of necessities through restrictions which require three men to do what two men should do. Labor's worst enemy in the opinion of the author is the spirit which holds back, has no regard for the employer's

interest and checks the effort of ambitious, energetic operatives who would make good wages by increasing their productive ability.

The Iron and Steel Situation in Scotland.

GLASGOW, November 17 1905.—Another change has come over the pig iron market. There has been a period of reaction during which prices drooped under the excited movements of weak operators in warrants, who became surprised when the advance stopped and alarmed at every decrease of a penny or two. It looked, indeed, for a short time as if the bottom of the warrant market were about to drop out. However, the undesirables were forced or frightened out of it, and the stock is now distributed among sound buyers. It is quite certain that the advance in pig iron has hampered manufacturers and if continued will have an adverse effect on the revival in trade. It is hoped that there will be no general demand from the United States for British iron, as that would set British markets wild. In the first ten months of the year the United States took 151,583 tons from this side, as against 47,185 tons to October 31, last year. Germany in ten months this year has imported from Great Britain 108,529 tons of pig iron, against 127,796 tons in the corresponding period last year.

Out of 89 furnaces now in blast in Scotland 49 are on hematite, probably more than ever on this class of iron. More will be put on hematite if ore can be got forward, but ore is dearer. Hematite iron has sold in this district at 74 shillings for delivery in the first half of 1906. Scotland is not now directly concerned with the production of steel rails, but has been so busy with shipbuilding material that hematite iron has risen to a price which compels the rail makers across the border to ask up to £7 per ton for rails—at all events, rates which buyers will not give. Therefore, rail mills in the northwest of England have had to close down till the clouds roll by.

Shipbuilding material, however, is now too high for shipowners to go on contracting for new ships. On the lowest present basis for plates good cargo steamers will cost £6 10s. per ton of deadweight capacity, and that is too dear to admit of profit in freight competition with millions of tons of shipping that cost £1 to £2 per ton less. From the point of view of the shipping industry it will not be regretted if shipbuilding is checked, for the enormous tonnage now being constructed is in excess of the world's probable requirements, unless there is some great outburst of commercial revival.

The Roebling Enterprise at Kinkora, N. J.

The only private town in New Jersey is being built at Kinkora by the John A. Roebling's Sons Company of Trenton. Work is now under way on nearly 100 private dwellings; one first-class hotel, to be conducted on the club house plan; one workingmen's hotel, containing all modern sanitary conveniences, and stores and other buildings necessary to make a complete modern city. Many other buildings are in project for the coming year, and the whole when completed will be used exclusively by the company's employees, who will work in the new mills now being erected at Kinkora, where more than 1000 men will be employed.

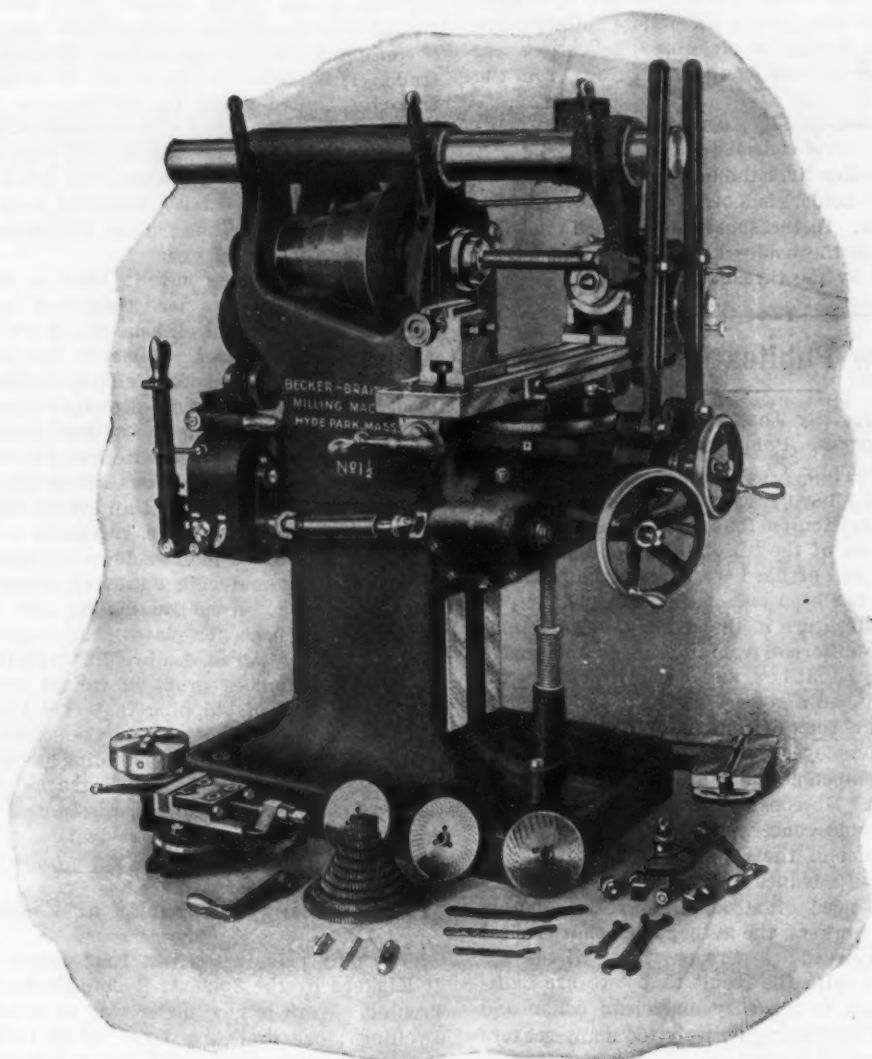
The mill and the model city will represent an outlay of more than \$1,000,000. A part of the mill is expected to be in operation within six months. The Roeblings will provide paved streets, a water system of filtered water, a sewer system, gas and electric lights, schools, churches, a library, fire department, police and street cleaning departments and all other adjuncts of a modern city. The site of the town is pleasantly situated on the high banks of the Delaware River, possessing natural advantages of health and beauty. The streets have already been laid out. They are exceptionally wide and will be planted with trees. A park will be maintained on the river slope. Each home will have ample ground for the cultivation of flowers and vegetables, and this will be encouraged by the company, which will do everything possible to promote the welfare of its employees.

The Becker-Brainard New Universal Milling Machine.

A number of improvements have been added to the universal milling machines made by the Becker-Brainard Milling Machine Company, Hyde Park, Mass. Special among these are the positive gear feed drive and the change feed mechanism by which 20 changes of speed can be made without stopping the machine. Other improvements include a new clutch mechanism in connection with the hand wheels, box type of knee and a telescopic elevating screw. In general it will be noticed that the body is of uncommonly heavy construction in the parts subject to the most strain when using high speed steel

trally driven feeds easily at any angle up to 45 degrees to either side. The table has three T-slots and oil pans at each end. The feed may be reversed from the front of the machine.

Each hand wheel is provided with a clutch inclosed in the hub. One wheel effects the vertical movement of the knee and the other the cross movement of the carriage. When the knee or carriage has been set to the required position the clutches are disengaged by pressing in the knobs projecting from the centers of the wheels, and thereafter any accidental turn given to the hand wheels will not alter the settings and the wheels will not revolve when the automatic feeds are thrown in. The vertical, transverse and longitudinal adjustment of the platen are facilitated by dials graduated to thou-



The Becker-Brainard No. 1½ Universal Milling Machine with Geared Feed.

cutters. In the gear feed referred to it is noteworthy that only spur gears are used and that there are no bevel gears or long rods that by torsional strain consume unnecessary power.

The spindle is of hammered crucible steel, has a ¾-inch hole through its center and runs in self centering bronze boxes arranged to compensate for wear. It is fitted with a No. 10 B & S taper hole in the front end, has a slot across the end to engage a clutch collar on the arbor and is also threaded to take a chuck. A threaded collar protects the chuck screw when it is not in use. The spindle is connected with the change feed mechanism through three spur gears and is back geared for slow speeds. The back gears are protected by guards.

The arm for supporting the outer ends of arbors is made of steel and is adjustable horizontally. The arbor support is removable and any of the various attachments for the machine may be placed in position without removing the arm. The table has an automatic longitudinal and cross feed in either direction, and being cen-

sandths of an inch. These may be set at any position by set screws.

The following are the principal dimensions of the No. 1½ universal milling machine:

Working surface of table.....	37¼ x 7 inches.
Length of table feed.....	24 inches.
Cross feed, in and out by power.....	8 inches.
Vertical adjustment of knee.....	17 inches.
Greatest distance from column to arbor support.....	15 inches.
Distance from center of spindle to arm.....	6 inches.
Distance between index centers.....	20 inches.
Index centers swing.....	10 inches.
Range of spindle speeds.....	15 to 335
Number of spindle speeds.....	16
Ratio of back gears.....	5 to 1
Number of changes of feed.....	20
Variations of feed to one revolution of spindle.....	0.002 to 0.125 in.
Net weight.....	2,500 pounds.

The change feed mechanism is conveniently located on the back of the column and is manipulated to give any one of its 20 speeds while the machine is running by moving the vertical lever seen at the side of the box in the accompanying illustration.

The Whitcomb-Blaisdell Planer Shipping Dog.

An instance of the importance of little things is furnished in the recent improvement to planers brought out by the Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass. The small dogs which are attached to the edge of a planer bed for operating the belt shipper and determining the limits of the movement of the bed may seem such simple devices that it would not occur to

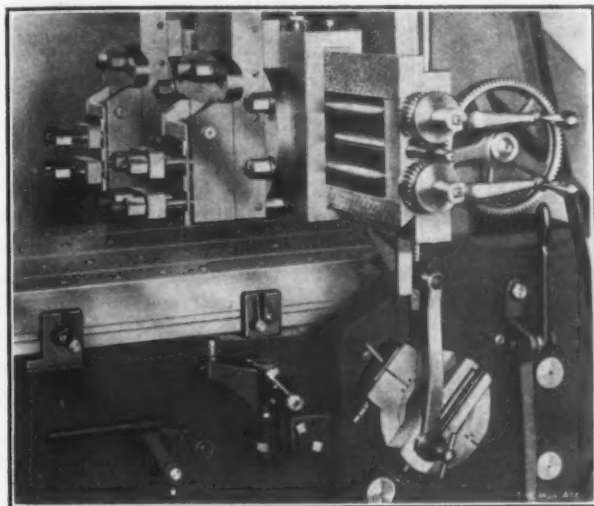


Fig. 1.—The Shipping Dogs as Applied to a Whitcomb-Blaisdell Planer.

many that they might be improved. Perhaps the only objection to the forms commonly employed is that they are not easily shifted in location, and this is a disadvantage that is felt only where the planer is used for a variety of work in small quantities or where, on the same piece of work, different lengths of stroke are frequently required. The objection, such as it is, has been

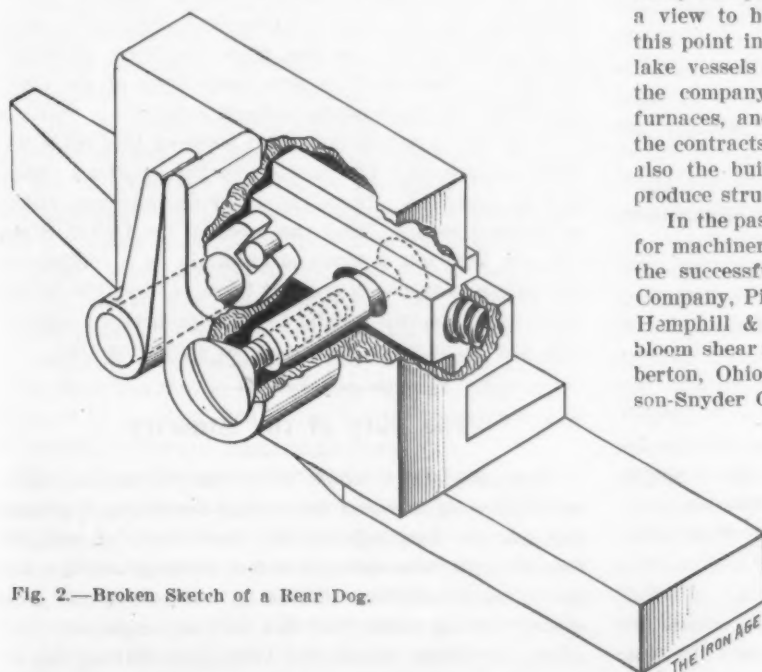


Fig. 2.—Broken Sketch of a Rear Dog.

somewhat aggravated since the introduction of high speed planing, for it is often desirable to move and set the dogs quickly, and any difficulty in accomplishing this tends to reduce the output of the machine. At high speed there may be danger to the operator and some little dexterity is required if the moving and setting of the rear dog is made while the planer is running. This is especially true if the clamping of the dog cannot be accomplished quickly and easily. The new self-locking shipping dog illustrated is one that can be instantly

released, shifted and locked in its new location with the fingers, unaided by a wrench or tool of any sort.

In Fig. 1 the dogs are shown applied to a planer and Fig. 2 shows an isometric perspective sketch of the rear dog. The front dog is similar in construction but made to offer its greatest resistance to movement in the opposite direction. Each dog carries a clamping piece, which slides in the T slot in the side of the planer table when the dog is released. It is held to the dog by an adjustable binding screw, the ends of which have ball shaped shoulders that fit in corresponding sockets, so that the screw is allowed an amount of angular displacement. When the screw is approximately perpendicular to the parts it connects, the dog is free to slide, but when it takes a diagonal position it draws the dog up against the side of the table, the force so exerted being increased by the pressure of the shipper roll when it strikes the dog. The device is normally self tightening by the action of a spring which tends to hold the screw in an inclined position. To move the dog the short lever on the front is pinched against the projecting fixed wing on the casting. This slightly revolves a stud to the other end of which is fixed a forked piece which straddles a pin on the clamping piece and returns the screw to the perpendicular position. The instant the lever is released the spring returns the nut to its binding position.

The New York State Steel Company.

The plans of the New York State Steel Company of Buffalo, N. Y., prove to be more extensive than appeared from the first announcement some weeks ago. The Garrett-Cromwell Engineering Company, Cleveland, Ohio, as engineer for the new company has been letting contracts during the past week for the first part of the installation, which consists largely of open hearth steel plant of the continuous or Talbot type, together with blooming and billet mill, with the necessary railroad tracks, yard equipment, &c. The company has purchased some 75 acres of land on the Buffalo River adjacent to the Lake Shore Railroad and on this property the plant will be located. This ground which is not far from a tract already occupied by blast furnaces has been selected with a view to having the Buffalo River made navigable to this point in order to provide for the delivery of ore by lake vessels direct to the blast furnaces. The plans of the company contemplate ultimately two 400-ton blast furnaces, and the increase of the steel plant covered by the contracts just let from 500 tons to 1000 tons per day, also the building of a finishing department which will produce structural material and wire products.

In the past week a number of contracts have been placed for machinery and equipment. The following are some of the successful bidders: United Engineering & Foundry Company, Pittsburgh, 36-inch blooming mill; Mackintosh, Hemphill & Co., Pittsburgh, blooming mill engines and bloom shear; Stirling Consolidated Boiler Company, Barberton, Ohio, 4000 horse-power water tube boilers; Wilson-Snyder Company, Pittsburgh, hydraulic pressure and feed pumps; Westinghouse Electric & Mfg. Company, Pittsburgh, three 250-kw. generators; Green Engineering Company, Chicago, Ill., chain grate stokers; Platt Iron Works Company, Dayton, Ohio, feed water heaters; C. W. Hunt Company, New York, coal and ash handling machinery; Alliance Machine Company, Alliance, Ohio, ingot stripping and traveling crane equipment. Ground has been broken and the engineers expect to have the first part of the plant completed and in operation not later than October 1, 1906.

Some of the prominent stockholders and directors of the New York State Steel Company are Spencer Kellogg, Sr., S. R. Mann, S. M. Clement, John D. Larkin, H. J. Pierce, Whitney G. Case, Wm. M. Evarts, E. P. Wilson and Charles Cooke, all of Buffalo, N. Y. Spencer Kellogg, Sr., president of the Spencer Kellogg Oil Company, is president and Stewart R. Mann is secretary and treasurer.

ist unless the minority will defer to the will of the majority—unless the individual will waive his personal views in the presence of a consensus of opinion. There comes a time in the existence of every association when these self evident facts should be kept strongly in mind, else the few members by carrying their opinions to the point of a refusal to follow the mandates of the association will cause the split which may mean dissolution and a return to that previous state of bitter competition which no one can contemplate with satisfaction. The statement will hardly be disputed that no individual member or minority group of members can lose as much by acceding to the vote of the majority as they would lose were the influence of the association removed by its disintegration.

Growth of the Pittsburgh Open Hearth Steel Trade.

The extraordinary activity in the steel trade is reflected in the unusual movement of old material from Chicago to the Pittsburgh district, where the present outcome of heavy melting scrap is insufficient to meet the requirements of the basic open hearth steel works. The diversion of this material is not without precedent, as heavy shipments were made from that great Western scrap center several years ago to relieve an acute shortage at Pittsburgh. A spread of \$3 a ton in the values at these respective centers is necessary to overcome the freight and to make this movement possible and profitable, and this differential in values has just come about. An intercompany shipment of 5000 tons between United States Steel Corporation constituents, made several weeks ago before this spread existed, caused considerable comment at the time and foreshadowed the shortage of this material in the Pittsburgh district. Not since the early months of 1903, preceding the tremendous slump in iron and steel values that year, have the requirements of the Pittsburgh steel works exceeded the normal outcome of heavy melting steel in that territory, nor has the spread in values, as compared with Chicago, exceeded \$2 a ton up to the present. As there is no fixed relation between the use of scrap and pig iron in the open hearth furnace any temporary shortage of scrap at Pittsburgh has been frequently overcome by increasing the proportion of pig metal, but the scarcity of the latter now prevents this practice and to meet the demands of the trade an increased quantity of scrap is required. On the other hand, the proportion of scrap used in basic open hearth practice in the West has always been greater than at either Pittsburgh or in the East, due to the greater spread between old material and basic metal at Chicago.

The present shortage at Pittsburgh is hardly more than temporary, but considering the tremendous growth of the open hearth steel industry in that district it would seem that a point would be reached in the not distant future when the supply of scrap will be insufficient to meet the current demand, and that other processes of steel making will have to be developed in which the use of old material is obviated. The development of the Talbot Furnace is a step in this direction, and it was largely to cope with such a future situation that one Pittsburgh steel producer has been expanding in this direction.

Since 1898 Allegheny County, in which Pittsburgh is situated, has been producing about 47 per cent. of the country's total open hearth steel output. The growth of this branch of the steel trade in the West has, however, failed to keep pace with the rest of the country, although

it would seem that its relative expansion in the Chicago district would exceed that of any other section of the country on account of its almost unlimited scrap resources. A comparison of the growth of the country's open hearth steel production with that of Bessemer, as well as the great strides made by open hearth steel in Allegheny County, is given below:

	Percentage of total open hearth and Bessemer steel production in the United States.		Percentage of total open hearth and Bessemer steel production in Allegheny County.	
	Open hearth.	Bessemer.	Open hearth.	Bessemer.
1898.....	25	75	31	69
1899.....	28	72	36	64
1900.....	34	66	40	60
1901.....	35	65	43	57
1902.....	38	62	45	55
1903.....	40	60	49	51
1904.....	43	57	52	48

It will be seen by this table that in the country as a whole the open hearth steel industry advanced from 25 per cent. of the combined open hearth and Bessemer output in 1898 to 43 per cent. in 1904. In Allegheny County a more rapid rate of progress by the open hearth industry is shown. Whereas in 1898 only 31 per cent. of the combined output of these two classes of steel was open hearth steel, in 1904 it had grown to 52 per cent., or more than half.

The Expansion in Blast Furnace Capacity.

The statistics just gathered by the American Iron and Steel Association, showing the capacity of the new blast furnaces that have started up since June 1, 1904, and of furnaces now under construction, are a good index to some tendencies in the iron trade. They suggest, first of all, how quickly the chill that came upon the iron trade in the fall of 1903 passed away, in spite of the predictions that were oft repeated in 1904 that a year or two would elapse before extensions could be seriously entertained. George Paish, who just a year ago was finishing a tour of the United States made in the interest of the London *Statist*, registered the common opinion in saying that the extensions of manufacturing plants in this country had been so great in recent years that larger outputs could be made without much additional capital outlay. He thought this meant the application of the nation's surplus profits to other than manufacturing purposes and mentioned particularly the construction of additional railroad tracks that were badly needed. The passing of a twelvemonth finds the additions to railroad facilities well under way, to be sure, but it finds also that so far as the iron trade is concerned the demands upon capital for new construction continue insatiate. The lull of 1904 only gave time for the rounding out of plans.

As printed in these columns one week ago, the statistics show that since June 1, 1904, 23 new furnaces, with a capacity of 3,137,000 tons of pig iron a year, have been blown in and that 16 furnaces, with a capacity of 1,830,000 tons a year, are now under construction. It may be added that plans for as many as 15 modern blast furnaces, in addition to the 16 now building, are quite sure to be put through. It is scarcely worth while to discuss the question whether the completion of all the capacity involved in these building programmes will give a surplus capacity. The consumption of iron has such a way of coming abreast of all extensions that it is idle to speculate to the contrary. According to the American Iron and Steel Association estimate the approximate pig iron capacity of the country on November 1, 1905, was

28,635,000 tons. It is certain that that amount of iron could not be produced in a year by the present blast furnace outfit. Not only is the steady extinction of blast furnace capacity to be reckoned with, but the fact that the uncertainty about some idle furnaces starting up amounts to a practical certainty that they will never go again. While furnaces actually abandoned or dismantled since June 1, 1904, are put at 461,000 tons annual capacity, furnaces that have been idle since June 1, 1904, may be counted as practically out of the race, and these represent 1,500,000 tons a year. Thus nearly 2,000,000 tons capacity counted as available on June 1, 1904, requires to be replaced, so that one phase of the new construction movement is that furnaces only likely to be active at intervals and at a high price level are being replaced with modern capacity quite certain to be active at the lowest level.

The distribution of the new furnace capacity as between merchant and steel works interests is worthy of note. Of the new furnaces started since June 1, 1904, the date of the last directory of the American Iron and Steel Association, a yearly capacity of 2,605,000 tons was built by steel companies, while 532,000 tons was merchant capacity. In other words, the steel companies made 83 per cent. of the blast furnace additions, measured by capacity. In the first six months of 1905 the steel companies produced 63 per cent. of the pig iron made and the merchant furnaces 37 per cent. It thus appears that the steel companies are providing for the steel trade's increasing demand upon the blast furnace and that the merchant furnace as a purveyor to the steel trade will be even a more rapidly dwindling factor in the future than in recent years. As a matter of interest it may be noted that the United States Steel Corporation's share of the new blast furnace capacity which became active in the past 17 months was 60 per cent. of the entire additions made by steel companies. This tallies closely with the percentage of steel ingots produced by the Steel Corporation in 1904, which was 61 per cent. of the total.

The last blast furnace building movement, that which was at its high in 1902, was to a very large extent a merchant furnace operation. The additions to foundry iron capacity then included a large New Jersey furnace and furnaces in Buffalo, in western Pennsylvania, Cleveland, Toledo, Detroit and South Chicago, besides several in the South. After an interval of three years, in which, as indicated above, steel company blast furnaces were five-sixths of the new pig iron capacity added, the building campaign now on and that which will be carried on in 1906 will give greater prominence again to the merchant furnace. Two such furnaces under way in the Chicago district and one, possibly two, more planned; one under way at Milwaukee, three in the South, one each at Cleveland, Toledo and Columbus, Ohio, emphasize the expansion of demand for foundry iron in the Central West and the lower Northwest. But it is to be noted that nearly all the blast furnace building now under way or planned is by companies that have their own ore or that are guaranteed a supply through affiliated ore interests. Never in the history of the trade was the necessity of grounding furnace operations in ore ownership more patent. In scanning the list of blast furnace builders and of projectors of furnaces one is struck by the evidence that the iron industry of the United States is now in quite well fixed lines and that the additions of the future are more and more to be extensions of properties whose place in the trade is well known. It need hardly be said that this condition makes strongly for immunity from unintelligent and destructive competition.

The Pittsburgh Industrial Iron Works.

The controlling interest in the American Production Company, Reynoldsville, Pa., manufacturer of presses and shears for sheet metal and plate work, also manufacturer of light structural steel and sheet metal work, has been purchased by C. F. Dickinson, J. S. Beckwith and O. L. Schlumpf, of Pittsburgh. The company, a \$300,000 corporation, was granted a Pennsylvania charter in April, 1904, and the business will be conducted under this charter, application having been made to have the name of the new company changed to the Pittsburgh Industrial Iron Works. The new company will manufacture and deal in engines, boilers and general contractors' and rolling mill machinery, in addition to a machine and general foundry trade, including brass foundry work.

The plant consists of four fire proof buildings of steel frame construction with hollow tile walls, cemented tile roofing, metal window frames and steel doors. The foundry and machine shop are under one roof, the building being 75 x 275 feet, commanded by a 10-ton Northern Engineering Company's crane, the foundry containing a 10-ton Newton cupola. The machine shop is equipped with modern machinery and tools for a general line of machine work. The main building is 65 x 300 feet and will be used as a general shop and blacksmith shop and will be equipped with up to date boiler shop tools. The power plant is located in the main building. Power for operating the machinery is furnished by one 275 kw. Westinghouse generator direct connected to a Buckeye engine. A 50 kw. Westinghouse generator furnishes power to operate the crane in the foundry. The power equipment includes two 150 horse-power horizontal tubular boilers. The pattern shop is a fire proof building 25 x 50 feet, equipped with modern wood working tools. A two-story building 26 x 40 feet contains the works, offices and drafting rooms, the general offices being located at 1218 and 1219 Westinghouse Building, Pittsburgh.

The facilities for procuring material for manufacture and fuel for motive power are excellent, the plant being located near the DuBois blast furnaces, the Punxsutawney Iron & Steel Company's furnaces and the furnaces of the Kittanning Iron & Steel Mfg. Company. It is also within a few miles of the Buffalo, Rochester & Pittsburgh Coke Ovens and has a coal mine about a half mile distant from the plant. Shipments can be made over the Buffalo, Rochester & Pittsburgh or the Buffalo & Allegheny Valley Railroad. C. F. Dickinson is president, J. S. Beckwith secretary and treasurer and O. L. Schlumpf general manager and chief engineer. C. F. Dickinson was formerly vice-president of Thos. Carlin's Sons Company, Allegheny, J. S. Beckwith was general sales manager and purchasing agent and O. L. Schlumpf was chief engineer and superintendent of the same company.

Pittsburgh Iron and Steel Headquarters.—Work on the Frick Building annex, now being erected in Pittsburgh, adjacent to the Frick Building and built by H. C. Frick, is progressing rapidly, and the building will be ready for tenants on March 1, 1906. It has been decided to connect the present Frick Building, the Frick Building annex and the Carnegie Building, practically throwing the three into one structure. This will be done to facilitate better intercourse between the three buildings, which contain the offices of the subsidiary interests of the United States Steel Corporation. The Carnegie Building is occupied almost exclusively by the Carnegie Steel Company, while the Frick Building is occupied by the National Tube Company, American Sheet & Tin Plate Company, American Bridge Company and American Steel & Wire Company. In addition most of the prominent independent iron and steel companies have their offices in the Frick Building, and others will move into the Frick Annex Building upon its completion. These three structures will thus house practically all of the larger iron and steel companies in the Pittsburgh district. The report that Mr. Frick was to purchase the Carnegie Building has been officially denied.

The Buffalo Metal Trades Association voted at its last meeting to become a branch of the National Metal Trades Association.

The Coal Trade.

BY FREDERICK E. SAWARD.

The tonnage of anthracite coal shipments for ten months of this year has passed the 50,000,000 ton mark. Surely this is an indication of growth in the demand for this class of fuel, as against a few years ago, the comparative figures showing an output about 3,000,000 tons above that of one year ago. There is not so much of this increase in first hands, but from what can be learned there are quite a number of dealers and others who are putting coal away, possibly for use in what now looks to be quite the distant future.

All in all, 1905 is bound to be a record breaker. A revival of the demand for anthracite steam sizes is a present-day feature extremely pleasing to the trade. There is no doubt that a very interesting battle has been waged between bituminous coal and these steam sizes of anthracite dating from the days of the big strike in 1902. In many instances consumers who had changed grates for bituminous were slow to decide to go back again to anthracite. But the improving inquiry and increasing consumption lead to the belief in anthracite circles that the users are being won back to the original steam maker.

Broken coal, a size that has been in plentiful supply all summer, and which usually is so until January, is in some cases far behind on orders. Every gas company in the country seems to be piling this size up, using not only ordinary storage bins, but vacant lots as well. Lehigh egg, stove and chestnut are all demanding good premiums and are short of needs. Free burning in the same sizes is ruling at full circular, and is also short, some boats being detained in loading. Small sizes are in more active demand than any of the larger sizes. Pea and buckwheat are getting rapidly cleaned up, although not really as short as other steam sizes. Rice is advancing in price and rapidly getting out of the market so far as mining companies are concerned, shipments in some cases being subject to a week to two weeks' detention in loading. Barley is in even worse shape than rice, none of the large shippers having any for sale, holding all their tonnage for contract.

Bituminous Coal.

So far as soft coal is concerned it is safe to say that from a producer's viewpoint the market is in good condition at all points. The main fact that makes for good is that there are not cars to fill promptly the orders of the dealers and consumers, who are alarmed as to the future. With the possibilities of interruption to supply, by reason of the idleness of the workers, the consumer would like to be assured of his position in regard to stock on hand. Many of them are now claiming all that is due them under the low priced contracts of last summer, and transient coal is therefore scarce with prices at least 30 cents a ton better.

There is a big demand from the West for all grades of fuel, resulting in heavy car requirements. Only the fact that grain has begun to move eastward, resulting in a heavy return car movement westward, makes it possible to meet the demand. The railroads, despite a complaint here and there, are earning the gratitude of the consumer and the trade for the splendid efforts being made to keep traffic moving. The Pennsylvania Railroad has made a remarkable record thus far and it would seem that the sincere efforts of officials of this road to solve the freight congestion problem are bearing fruit. One noticeable improvement is the absence of congestions at the local terminals. Sidings now are free to a surprising extent. It will probably be found that the remedies proving most effective were applied in motive power departments. The restrictions placed by the railroad companies are such as to keep cars on their own lines. New England is suffering more from this than any other market, being embargoed to Philadelphia & Reading, Lehigh Valley and Central Railroad of New Jersey cars. Every railroad is making Herculean efforts to better the situation, but without anything more than temporary success. The days when coal was left for days standing on the

sidings awaiting the pleasure of the receiving party are now no more. Railroads are anxious to secure the empty car and send it speeding back to the mines for a new load, and the consumer or dealer is just as anxious to get the car emptied, as he has ready use or can find ready disposal for all that can be delivered to him.

Baltimore & Ohio shippers are affected by the limited number of Philadelphia & Reading cars being sent to the region where this road usually furnished a very large proportion of the cars available for loading East. The urgent needs of the anthracite regions are causing the Reading Company to keep its equipment at home for the hard coal business; the Baltimore & Ohio, also trying to keep its cars under its own control, is refusing to allow shipments to points off its own line, compelling coal to be shipped largely to tide terminals. Norfolk and Newport News shippers are still suffering from light shipments caused by bad car supply, and those having prompt coal to offer are getting large bonuses for their tonnage. The line trade is good for such cars as are available for line use. The many embargoes and restrictions are a serious setback to shippers having old orders to fill which have been interrupted by these restrictions. Many are refusing to accept new line of business on account of the trouble.

The Western railroad companies are paying for spot coal 50 cents or more above their contract prices. This action seems to mean a whole lot, for the railroad companies are not paying more for coal than is necessary, and, moreover, they are supposed to possess a great advantage in obtaining fuel because of their influence with operators, partly by reason of their established practice of confiscating coal and partly because they are the arbiters of equipment distribution. Despite all those advantages they are craving fuel at greatly enhanced prices. It is reported that several of the railroads have commenced to stock coal.

Some very high prices are reported at the mines for Pennsylvania coal that is urgently needed, and the Georges Creek of Maryland is altogether out of the market. Tidewater prices at New York are as follows per gross ton:

High grade three-quarter lump.....	\$3.25
High grade gas, run of mine.....	3.20
Best Miller vein coals.....	3.00
Good Miller and Moshannon.....	2.95
Best Somerset.....	2.85
Fairmont, three-quarter.....	3.25
Fairmont, run of mine.....	3.10

Line bituminous, at mines, for prompt delivery are quoted per gross ton:

Pennsylvania Railroad Coals.

Best Miller vein.....	\$1.50
Good Miller and Moshannon.....	1.40
Best gas coal, three-quarter lump.....	1.60
Best gas coal, run of mine.....	1.50
Best gas coal, slack.....	1.20
Ordinary Clearfield.....	1.40
Ordinary Latrobe.....	1.40

Baltimore & Ohio Railroad Coals.

Best Somerset.....	\$1.40
Somerset.....	1.40
West Virginia Freeport.....	1.35
Fairmont district, three-quarter lump.....	1.40
Fairmont district, run of mine.....	1.35
Fairmont district, slack.....	1.20

J. M. Gledhill of the firm of Sir W. G. Armstrong, Whitworth & Co., Limited, Manchester, England, on November 11 read a paper on "The Practical Use and Economy of High Speed Steel" before the Glasgow and West of Scotland Foremen Engineers' and Iron Workers' Association. The paper has been published in pamphlet form, profusely illustrated, the document being one of the most elaborate of its kind which has come to our notice. It treats particularly of the brands of high speed steel made by the firm named.

The committee of the Syracuse (N. Y.) Metal Trades Association appointed some months ago to consider the advisability of establishing a trade school in that city has made a good beginning in the work. At the last meeting of the association one-third of the requisite \$50,000 was subscribed. Prof. John E. Sweet has agreed to give half his time to the interests of the school. A site is under consideration and it is expected that work will be started at an early date.

Iron and Steel Development in Canada.

Thirty pages of the November 27 issue of *Daily Consular and Trade Reports* of the Bureau of Manufactures, Department of Commerce and Labor, are devoted to a report on "Canadian Industries," by Charles M. Pepper, the well-known writer on economic questions. Mr. Pepper is the author of "To-morrow in Cuba" and was appointed special commissioner by President Roosevelt in 1903 to report on the feasibility of an all rail line connecting the United States with Central and South America. He made a tour of Canada in the summer and early fall of this year as special agent of the Bureau of Manufactures to inquire into commercial and industrial conditions, particularly with regard to trade relations with the United States and the prospect of their enlargement. He attended the sessions of the Canadian Tariff Commission while that body was in the northwest section of the Dominion, and thus had opportunity to meet many leading officials and representative business men. Mr. Pepper's report bears evidence of severe condensation in the effort to present a suggestive review of trade conditions that will be brief enough to invite general reading by manufacturers and others interested. Emphasis is put upon the field offered by the new Canadian Northwest for the development of fresh markets for the products of the United States. The report concludes that for years "the dominating influence in the Canadian Northwest as relates to markets and possibly public affairs will be that of settlers from the United States." From January 1 to October 1, 1905, 24,843 Americans crossed the boundary line to settle in Manitoba, Saskatchewan or Alberta. Of this number Minnesota contributed 5816, North Dakota 4613 and Montana, Iowa, Wisconsin, South Dakota and Illinois together contributed 7176. Mr. Pepper urges American manufacturers to pay special attention to the Canadian Northwest "if they expect to hold the trade that belongs to them," and adds: "It is emphatically the case that trade follows the United States settler."

Dependence on American Products.

Points particularly dwelt on in the report are that the chief contributing cause of the building up of Canadian industries has been United States capital; that no industrial works of any kind is built in the Dominion in which the machinery installation is not very largely from the United States, this country having almost a monopoly in mining machinery; that "while the United States has no reason to look forward to fiscal legislation by Canada that will give the United Kingdom a monopoly of the Dominion's market for manufactured products it may be expected that further exertions will be made to discriminate in favor of British products that do not come into direct competition with Canadian products. The delicate task to be attempted in the coming revision of the tariff will be so to regulate the schedules that both Canadian manufacturer and British manufacturer shall be benefited at the expense of the mills and factories of the United States."

The iron and steel situation is discussed at some length and the establishment of the two mills now rolling rails is described in detail. Bounty operations, raw material supplies and other features presented in the columns of *The Iron Age* from time to time are gone into. As to the prospects for the iron industry Mr. Pepper says among other things:

The future of the iron and steel industry in Canada is involved in a number of problems not yet fully solved. It may be presumed that the Newfoundland Government will put no difficulties in the way of exporting iron ore from Belle Isle, and the ownership of the Wabana Ranges assures a supply of a certain character to the Dominion and the Nova Scotia companies. That too much dependence cannot be placed on the Nova Scotia or Cape Breton deposits of iron ore may be inferred from the fact that though the bounty on pig iron produced from native ore is 50 per cent. greater than on that from foreign ore, neither of the above companies makes extensive use of the native ore. The output from the Nova Scotia deposits decreased from 84,000 tons in 1895 to 40,000 tons in 1903. In Ontario, which includes the Soo, the total production of iron ore in 1903 was 209,634 tons, of which 153,500 were exported. In 1904 the output was 273,000 tons, of which 169,000 were exported.

It is generally agreed that the industries already established must continue to depend largely on Government support, and the

continuance of the duty on steel rails may be regarded as certain. Whether the bounties on pig iron and structural steel will be kept up is yet to be determined.

No Cheap Steel in Canada.

The building of blast furnaces and steel works, which made the present steel rail industry of Canada possible, was attended by a scale of expenditure most distressing to the stockholders. Rail manufacture in the Dominion is yet far from reaching the perfection in organization and economy in production which have been attained by the plants in the United States. For many years this must be considered as a handicap in the effort to develop an exclusively Canadian iron and steel industry to supply the Canadian market or to compete with the United States. It is also the belief of many expert authorities that the lower grade ores and poor coal, with the difficulty of access to it for most sections, constitute a permanent drawback to Canadian iron industries, so that their costs will be considerably above those in the United States, and that a high tariff will always be necessary in order to keep out steel from this side. No Canadian steel works can produce cheaply in comparison with any of the leading steel making countries of the world.

The possibility of cheapened production through new processes has not been demonstrated. The Government granted an appropriation for Dr. Heroult's electric steel making experiments at the Soo. These may result in something of value to the Canadian steel industry, but up to this time his process has been employed abroad in the manufacture of limited quantities of tool steel and steel for uses which do not involve any large tonnage. There is as yet no basis for the expectation that the electric process will afford any measurable compensation to Canada for the absence of desirable metallurgical fuel. It should be stated, however, that Dr. Heroult, in newspaper interviews, has expressed himself very confidently, stating that under favorable conditions pig iron can be made for \$10 per ton, while steel will cost only about \$4 per ton more to produce.

The report says that while estimates of the steel rails that will be needed for the next five years are widely apart, the majority of railway managers seem to agree on 150,000 tons as certain to be required annually, with a possibility of exceeding 200,000 tons once or twice.

The Negotiations for Hanging Rock Properties.

It is not true, as reported in the daily and financial press, that the negotiations have been concluded through which Charles M. Schwab acquires a group of iron and steel making plants in the Hanging Rock region. These negotiations have been pending for upward of a year and have been referred to in the past, the friendly offices of Rogers, Brown & Co. having been secured by both parties. The plants in question are those of the Belfont Iron Works Company at Ironton, Ohio, which includes a blast furnace and a wire and cut nail mill; the Kelly Nail & Iron Company of Ironton, Ohio, with a blast furnace and wire and cut nail mills, and the Norton Iron Works, Incorporated, of Ashland, Ky., also equipped to make nails and wire. These three companies control the Ashland Steel Company, Incorporated, of Ashland, Ky., with a moderate sized Bessemer plant and a Garrett wire rod mill.

To some extent the works are old fashioned, but they have long been known as money makers. It is reported that the average profits during the last five years of the group in question have been \$700,000 per annum. The Ironton district has proved its capacity to make pig iron very cheaply. Besides the local ores, the district practically pays Valley rates on iron ore from Lake Erie points to the furnaces, while the freights on coke from Virginia and West Virginia are low. Located on the Ohio River, with extensive railroad facilities, the works are well placed for cheap marketing of product and have long been a factor in the steel, wire and nail trade. It is understood that Mr. Schwab fully appreciates these advantageous features and that he is seeking to acquire control of the properties for himself and his friends.

The Westmoreland Steel Company, Pittsburgh, with works at Huff's Station, near Greensburg, Pa., has been reorganized, and will hereafter be known as the Atlantic Tool Steel Company. The offices are located in the House Building, Pittsburgh. W. D. Corcoran, formerly of the Howe-Brown Works of the Crucible Steel Company, is president and general manager, J. H. K. Burgwin treasurer and R. M. Straub secretary.

OBITUARY.

JAMES B. OLIVER, president of the Oliver Iron & Steel Company, Pittsburgh, died at his home at Shields, in the Sewickley Valley, near Pittsburgh, on Tuesday night after a brief illness of pneumonia. Mr. Oliver was born in the First Ward, Allegheny, April 4, 1844, and was the third son of Henry W. and Margaret Oliver, who had emigrated from Ireland two years before and settled in Allegheny City. His education was secured entirely at the public schools of the First Ward. At the age of 20 he entered the office of Lewis, Oliver & Phillips as a clerk and began his real life as an iron manufacturer. In 1866 he was made a member of the firm, in which his brothers, Henry W. and David B., were partners. In 1880 W. J. Lewis retired and the business was continued under the name of Oliver Brothers & Phillips and in 1887 was incorporated as the Oliver Iron & Steel Company, of which Mr. Oliver had for many years been the president and active head. He was also president of the Oliver & Snyder Steel Company, the Monongahela Natural Gas Company and the other corporations which together form what is generally known as the Oliver interests. Mr. Oliver was a member of the Duquesne, Union and other clubs.

JOSEPH R. LAUGHREY, one of the best known coal and coke operators in Western Pennsylvania, recently died from consumption at his home in Dawson, Pa., aged 60 years. He was born in that vicinity and after receiving a training in the public schools he began working in the mines of Brown & Cochran. Later he attended a Pittsburgh business college and was then made shipping clerk of the Jintown & Sterling Works of Brown & Cochran. For ten years following 1875 he was superintendent of the two works. In 1885 he was made general manager of the Brown & Cochran properties. He held that position until three years ago, when he was succeeded by his son, James S. Laughrey. He was one of the promoters of the First National Bank of Dawson, a director and vice-president of the Washington Coal & Coke Company and a director of the Dawson Supply Company.

THOMAS G. SMITH, a well-known mechanical engineer, died November 19, at his home at Avondale, near Cincinnati. He had been ill for a long time with a complication of diseases. He was a member of the American Society of Mechanical Engineers and one or two local organizations. He leaves a widow and four children.

STEPHEN SALISBURY, who died at Worcester, Mass., November 16, bequeathed to the Worcester Polytechnic Institute the sum of \$200,000, no conditions being imposed as to its purpose. A gift of \$100,000 by him to the institute was announced at the last commencement, and some years ago he gave it the Salisbury Laboratories. These are not all his gifts to the institute, the aggregate of his munificence reaching a large figure. Mr. Salisbury was for a number of years a director of the Washburn & Moen Mfg. Company and was largely interested in other industries of Worcester.

DAVID C. MOULTON, Providence, R. I., for a number of years superintendent of engineering and construction of the General Fire Extinguisher Company, Providence, died in that city November 26, aged 74 years. He was with the Providence Steam & Gas Pipe Company in 1854 and worked himself up to superintendent, having charge of the construction of oil and rosin gas works for lighting mills and villages. After the company took up the installation of automatic sprinklers, about 1880, he was identified with that branch of the business, and in 1893, when the company and others in this branch of the business united as the General Fire Extinguisher Company, he became superintendent of engineering and construction, which office he held until his retirement in 1900, after 46 years of continuous service. He leaves a widow, four sons and a daughter.

In connection with the recent decision of the Interstate Commerce Commission that after August 1, 1906, not less than 75 per cent. of the cars in any freight train shall be air braked cars, it is stated that of 1,790,113 freight cars in service in the United States on October 1, 1905, 1,564,396 were equipped with air brakes.

PERSONAL.

J. M. Deetrick has been made general superintendent in charge of the Northern blast furnaces and Mahoning Valley and Atlantic works of the Republic Iron & Steel Company, with headquarters in the Brown-Bonnell offices, Youngstown, Ohio. Mr. Deetrick announces these appointments: G. E. Huggins, superintendent of the Mahoning Valley works; Robert W. Coates, superintendent of the blast furnaces in the Shenango Valley and Atlantic works; P. J. Moran, superintendent of blast furnaces in the Mahoning Valley.

Enoch Stanford, formerly of Harrisburg, Pa., has been appointed general superintendent of the Duplex Metals Company, which is putting in two new sheet mills at its plant at Chester, Pa.

Axel Sahlin has removed from London to Brussels, Belgium, and the main offices of Julian Kennedy, Sahlin & Co. are now at 52 Rue du Congrès, Brussels.

A. W. Selby has resigned as superintendent of the Covington, Ky., mill of the Republic Iron & Steel Company.

Wm. E. Burnham, formerly vice-president of the Eaton, Cole & Burnham Company, Bridgeport, Conn., has been elected managing director of the Pacific Iron Works of Bridgeport.

John F. Weller, formerly traveling freight agent for the Missouri, Kansas & Texas Railroad, has resigned that position to become private secretary to A. A. Corey, general superintendent of the Donora open hearth steel plant of the Carnegie Steel Company, Donora, Pa.

A. A. Corey, who recently resigned as general superintendent of the Sharon Works of the Carnegie Steel Company, at Sharon, Pa., to accept a similar position at the Donora Works, was presented with a silver set, a leather chair and a clock by the employees of the Sharon Works. On the night of November 25 a banquet was tendered Mr. Corey at the Sharon Club, Sharon, Pa., and he was given a Masonic charm by the department heads.

Samuel A. Benner, general sales agent of the Carnegie Steel Company, Pittsburgh, has been elected a director of the South Side Trust Company of that city.

William Wutherow, formerly auditor of costs of the Republic Iron & Steel Company, Chicago, has been appointed acting superintendent of the Mitchell-Tranter plant of the company at Covington, Ky.

It is now announced from Washington that as soon as the Board of Consulting Engineers on the Panama Canal reports, the Canal Commission will perfect its plans for the building of a lock canal, as favored by the minority report of the consulting engineers. Some of the figures and estimates in the consulting engineers' reports have become known. It is shown that if a sea level canal is built it will be necessary to excavate 102,088,174 cubic yards of solid rock. This is 17,848,640 cubic yards more than it will be necessary to dig out if a lock structure such as is favored in the minority report is adopted as the best type. To excavate these 17,848,640 cubic yards of rock, which are below sea level, would take five years, and that after the rock above had been taken out and carried away. The cost would be \$5 a cubic yard, thus making the total extra cost on this point alone practically \$90,000,000.

It is probable that next year the United States Steel Corporation will build a steel bridge across the Monongahela River at Donora, Pa., in order to allow better deliveries of steel to the Pittsburgh plant of the Pittsburgh Steel Company at Monessen, Pa., which is directly across the river from Donora.

The John Roebling Sons' Company, Trenton, N. J., has completed the largest towing cables ever made. Each is 1200 feet long, 2 inches in diameter and weighs 7500 pounds. They will be used in towing the dry dock Dewey from Sparrow's Point, Md., to Olangapo, Philippine Islands, a distance of 13,000 miles.

Supply and Machinery Dealers Meet.

(By Telegraph.)

CINCINNATI, OHIO, November 28, 1905.—A meeting was held at the Grand Hotel yesterday of representatives of the American Supply and Machinery Manufacturers' Association, National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association. They represent firms from all over the country. This is the first time that their associations have met in joint conference, the object being to arrange for closer relations from a business point of view and holding a joint meeting once each year instead of three separate meetings, as is the case at present. It is believed that if this can be accomplished the benefit derived by each will be much greater and that an interchange of ideas relative to trade generally would lead to a policy that would be fruitful of good results.

Each association held a separate conference, after which they met together in executive session. F. D. Mitchell, secretary-treasurer of the American Supply and Machinery Manufacturers' Association, who is also the secretary-treasurer of the American Hardware Manufacturers' Association, was chosen secretary of the meeting. The subject of prices did not enter into the discussion, which was more of the nature of what could be done to further the interests of each association. To this end the following resolution was unanimously adopted:

Whereas, The Executive Committee of the Southern Supply and Machinery Dealers' Association, the National Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association have met in joint session for the purpose of devising ways and means for furthering their mutual interests; therefore be it

Resolved, That the members of the two aforesaid dealers' associations use their best efforts to aid the American Supply and Machinery Manufacturers' Association to add to its membership by recommending and urging such manufacturers as are interested in the success of both manufacturers and dealers to join said association without delay; and be it further

Resolved, That the American Supply and Machinery Manufacturers' Association pledge themselves to use their individual efforts to induce any supply dealers now members of the National or Southern Supply and Machinery Dealers' associations to become identified with them promptly.

An effort was made to fix upon a time and place for another joint meeting that would be agreeable to all concerned, but no definite conclusion was reached. The National Supply and Machinery Dealers' Association will meet in February, but the place has not been announced. The Southern Supply and Machinery Dealers' Association will meet in St. Louis March 14. The manufacturers, of course, will attend both meetings. At the close of the session the members adjourned to the Queen City Club for dinner as the guests of Samuel L. Moyer of the Lunkenheimer Company.

Following is a list of those attending:

American Supply and Machinery Manufacturers' Association: Samuel L. Moyer, Lunkenheimer Company, Cincinnati, Ohio; Edward C. Hinman, American Steam Pump Company, Battle Creek, Mich.; M. W. Mix, Dodge Mfg. Company, Mishawaka, Ind.; Charles F. Aaron, New York Leather Belting Company, New York; S. P. Browning, Ohio Valley Pulley Works, Mayaville, Ky.; N. A. Gladding, E. C. Atkins & Co., Incorporated, Indianapolis, Ind.; Charles P. King, American Iron & Steel Mfg. Company, Atlanta, Ga.; Joseph H. Grubb, Hussey-Blinn Shovel Company, Pittsburgh, Pa.; F. D. Mitchell, New York City.

National Supply and Machinery Dealers' Association: E. E. Strong, Strong, Carlisle & Hammond Company, Cleveland, Ohio; W. S. Somers, Somers, Fittler & Todd, Pittsburgh, Pa.; J. H. Drury, Cleveland, Ohio; A. E. Brion, Peter A. Frasse & Co., New York; George Puchta, the Queen City Supply Company, Cincinnati, Ohio; C. A. Strelinger, Chas. A. Strelinger Company, Detroit, Mich.; George T. McIntosh, McIntosh Hardware Corporation, Cleveland, Ohio.

Southern Supply and Machinery Dealers' Association: John G. Christopher, Jacksonville, Fla.; George V. Denny, Georgia Supply Company, Savannah, Ga.; George A. Smith, Smith-Courtney Company, Richmond, Va.; Peter E. Blow, Southern Brass & Iron Company, Knoxville, Tenn.; Milner S. Price, M. S. Price Machinery Company, Norfolk, Va.; Thomas G. Hyman, Hyman Supply Company, Newburn, N. C.

H. C. Frick, Pittsburgh, is credited with having recently bought large tracts of coal lands in Barbour and Taylor counties, W. Pa., in the Fairmont district. The coal was purchased at \$25 an acre.

Labor Notes.

The action of the Housesmiths' and Bridgemen's Union in New York City in calling a strike on buildings under construction by Post & McCord may lead to a long contest between the Building Trades Employers' Association and the union. The beginning of the trouble was the strike of the International Association of Bridge and Structural Iron Workers against the American Bridge Company on account of the employment of non-union men on work at McKeesport, Pa. Later a strike was declared against Post & McCord because of their alleged connection with the American Bridge Company. This last strike was a direct violation of the arbitration agreement existing between the building trades unions and the Building Trades Employers' Association in New York. The latter association in view of the breaking of the agreement by the union decided to put nonunion men at work on three Post & McCord buildings in New York City. Thereupon the Housesmiths' and Bridgemen's Union threatened to order a general building strike. Nonunion men to the number of 300 were put to work on the three Post & McCord buildings on Tuesday, November 28. In this action Post & McCord have the backing of the Employers' Association. At this writing a general strike in the building trades seems imminent, and the first call of the unions, it is said, would bring out 16,000 members at work on about 50 buildings now going up in New York City.

The recent annual convention of the American Federation of Labor at Pittsburgh adopted a resolution, on the recommendation of President Gompers, instructing the Executive Council to select one labor organization against which an injunction has been granted, employ legal talent and carry the case to the United States Supreme Court to test the constitutionality of the injunction laws now in force.

The contest between the union teamsters in New York and the New York Team Owners' Association has developed more rapidly in the past week. The issue is the open shop and the method of the union has been to present its demands to employers individually, getting them if possible to sign an agreement to employ none but men with union cards. A number of strikes have resulted and several hundred teamsters are now idle. Of 300 members of the New York Team Owners' Association about 40 have declared for the open shop and are hiring men on that basis. The union early this week asked the employers' association to submit a new proposition. In answer the employers adopted the following declaration at a meeting held Tuesday, November 28: "Inasmuch as the truckmen are responsible for the delivery of goods placed in their custody, they should therefore have full discretion to employ the drivers they consider competent to perform the work, but in the employment of drivers they agree not to discriminate against drivers because of their membership in the International Brotherhood of Teamsters."

The battle ship Virginia, built by the Newport News Shipbuilding Company, developed a maximum speed of 19.743 knots an hour on her standardization trial, November 21. This exceeds contract requirements by 0.743 and is the fastest mile ever made by a United States battle ship, exceeding the record of her sister ship, the Rhode Island, by 0.413 per cent.

The New York Central Railroad is about to award one of the largest single orders for locomotives ever placed. It is thought that the company will purchase about 300 locomotives, and something like \$7,000,000 will be spent. The locomotives will be of several different types and they will not be for the New York Central alone, as the company is, for the first time, ordering for a number of its subsidiary lines. It is probable that the order will be placed with the American Locomotive Company and it is stated by that corporation that if the business is placed with it the locomotives will be built at the Schenectady and Dunkirk works.

NEWS OF THE WORKS.

Iron and Steel.

The Aetna-Standard works of the American Sheet & Tin Plate Company, at Martins Ferry, Ohio, containing 23 hot mills, is being operated to full capacity. This is the second largest sheet mill owned by the company, the largest plant being the Vandergrift works, at Vandergrift, Pa.

The Fort Wayne Rolling Mill Company, recently incorporated, was formed to take over the assets of the Fort Wayne Iron & Steel Company, Fort Wayne, Ind., which is in the hands of a receiver.

The Franklin Rolling Mill & Foundry Company, Franklin, Pa., has decided to discontinue the operation of its foundry department and has converted the foundry building into a mill department in which will be installed a 12-inch mill, upon which work has already started.

Six more mills of the 28 of the American Sheet & Tin Plate Company at Elwood, Ind., were started up last week, making 22 in all. The remaining six will start as soon as steel arrives. More than 2000 people will then be employed.

The plant of the Western Tin Plate Company, at Greencastle, Ind., will be enlarged to six mills to meet the increase in business. J. E. Carnahan of Canton, Ohio, is at the head of the company.

The Pittsburgh Construction Company, general contractor, Diamond Bank Building, Pittsburgh, is erecting for the Jones & Laughlin Steel Company, at its American Iron & Steel Works, Pittsburgh, several new steel buildings to contain a large structural mill, which will be known as mill No. 14. The main building will be 495 feet long, 92 feet wide and 61 feet high to the chord of the roof, and will require about 2000 tons of structural steel. Three additional buildings, 150 feet long, 34 feet high to the lower chord of the roof and requiring about 2000 tons of steel, are also being built. One of these buildings is 133 feet wide, another 140 feet wide and the third 143 feet wide. The steel for the buildings was rolled by the Jones & Laughlin Steel Company, while the Port Pitt Bridge Company fabricated it and the erection work was started by the Pittsburgh Construction Company November 1. As the buildings have been under erection only one month and are nearly completed, the Pittsburgh Construction Company has made a new record for quick erection in the construction of these buildings.

The Republic Iron & Steel Company has begun to dismantle its Sharon, Pa., plant and is moving the machinery to Youngstown and elsewhere.

We can state officially that the report that the Carnegie Steel Company is considering the matter of building a rail mill at South Sharon, Pa., is untrue.

General Machinery.

The Landis Machine Company, Waynesboro, Pa., expects to occupy its new addition on December 15.

The Pennsylvania Railroad contemplates the erection of a new round house and coaling station at Lawrence Junction, New Castle, Pa.

Tobias Fox, Woodbridge, Ont., has secured a patent on a roller bearing for the manufacture of which a company is being formed. The machinery for the manufacture of the bearing has not yet been purchased.

The Boiler Specialty & Mfg. Company has been incorporated at Rochester, N. Y., with a capital of \$15,000, to manufacture machinery, tools, &c. The incorporators are Orrin Haxie, Charles J. Robinson and Joseph B. Miller of Rochester.

The Indianapolis Southern Railway Company, Indianapolis, Ind., is erecting machine shops and round house at Indianapolis. The machine shop will be 60 x 160 feet. The company will also put in a 70-foot turntable.

Power Plant Equipment.

The Westinghouse Machine Company, East Pittsburgh, Pa., has received orders in the last few days for 25,000 horse-power Westinghouse-Parsons steam turbines. The Brooklyn Rapid Transit Company has ordered a third turbine of 12,000 horse-power, and the Los Angeles Light & Power Company has placed an order for one of 9000 horse-power. The others are smaller turbines. The works of the company are running full time.

The L. W. Gillespie Company has been incorporated at Marion, Ind., with \$15,000 capital stock, to manufacture gasoline engines and electrical supplies. The directors are Arthur F. Leonard W., and Ella M. Gillespie.

The Bury Compressor Company, Erie, Pa., reports business unusually brisk. Among recent orders are: Ball Engine Company, Erie, Pa., 250-foot machine; Parish & Bingham Company, Cleveland, Ohio, 135-foot machine; Erie City Iron Works, Erie, Pa., the air end of 1670-foot machine; American Steel & Wire Company, Cleveland, Ohio, 850-foot machine; E. W. Bliss Company, Brooklyn, N. Y., 350-foot machine; Edw. E. Rieck Company, Pittsburgh, Pa., 450-foot machine; Macbeth-Evans Glass

Company, Elwood, Ind., plant, 835-foot machine; Morgan Engineering Company, Alliance, Ohio, 350-foot machine. Foreign business also keeps up, an order being recently received from Japan for 135-foot capacity machine, motor driven.

The Bahia Gas & Electric Company has been incorporated in Maine with authorized capital stock of \$3,500,000 to operate systems of gas and electric lights in Bahia, Brazil. The officers given are: President, James S. Hernan, and treasurer, J. L. Brophy, both of Portland, Maine.

In order adequately to care for its continually increasing business the American Blower Company, Detroit, Mich., is erecting a three-story addition to its plant. This addition is rendered necessary by the growing popularity of its type "A" inclosed vertical self oiling engine, which was placed upon the market some two or three years since, meeting with immediate favor. The building will be of steel and brick construction. The first floor will be used for erecting and testing engines, a very complete new outfit being put in for the latter purpose. The power from engines under test will be absorbed by generators and air compressors. An electric crane will form part of the equipment in this department. The second floor will be used for storing engine parts and painting the completed engines, and the third floor will be utilized for storage purposes entirely.

The Du Bois Iron Works, Du Bois, Pa., which has for a time done repair work in addition to manufacturing new machinery, has arranged to carry on the latter exclusively. The leading lines are gas engines and steam pumps. The company is prepared to manufacture gas engines of all sizes up to 100 horsepower and is having patterns made so as to turn out pumps of all dimensions.

Burdett Loomis and associates of Hartford, Conn., have purchased the Windsor Locks Electric Light Company and the Enfield Gas Company, and will combine the several interests. The company will add to the electric plant probably new water wheels and gas engines and will erect a new gas plant in which will be installed Burdett Loomis new and improved gas generators. Gas will be furnished to Enfield, Windsor Locks, East Windsor, South Windsor, Thomsonville, Hazard and other villages in Connecticut. Mr. Loomis is in charge of construction and purchases.

The Fitz Water Wheel Company, Hanover, Pa., recently moved into its new works, which consist of six buildings, all of brick. The machine shop is 60 x 120 feet; foundry, 60 x 60 feet; blacksmith shop, 20 x 20 feet; fire proof pattern house, 30 x 50 feet, and office, 20 x 20 feet. The whole plant is run by electricity. The company is shipping its I X L steel overshoot water wheels all over the States and to South American countries.

Foundries.

The Essex Foundry, Newark, N. J., whose plant already covers 16 acres of ground, is to erect an addition 75 x 113 feet, which will be equipped with new molding machines and other up to date tools. The building will be of mill construction with saw tooth roof.

Henry Ehret, Belleville, Ill., expects to build a foundry in the near future. Equipment has not yet been provided for, but will soon be taken up.

The Davison-Namack Foundry Company, Ballston Spa, N. Y., is building an addition to its plant for the dressing of finished work. No equipment is required.

The Dixon Car Wheel Company is rebuilding its wheel foundry, which was recently destroyed by fire, and is repairing as far as possible such equipment as was damaged and the balance it is purchasing locally.

The Zanesville Malleable Company, Zanesville, Ohio, has just been incorporated with a capital stock of \$150,000, and will commence active operations about December 1. The company expects to be busy from the start and contemplates doubling the capacity in the early spring. The stock is held almost entirely by Frank Moore and H. A. Hall of Pittsburgh, and J. K. Gardner, Ridgeway, Pa. The officers of the company are as follows: Frank Moore, who is also president of the Pittsburgh Malleable Company, president; H. A. Hall, secretary and treasurer; J. M. Barringer, formerly superintendent of the Buckeye Malleable Castings Company, Columbus, general manager.

C. S. Koch, formerly with the American Steel Foundries, Pittsburgh, with other parties has applied for a charter for a new undertaking to be known as the Fort Pitt Steel Casting Company, which has secured a site of land at Christy Park, near McKeesport, Pa., on the Baltimore & Ohio Railroad. Plans have been made for a building on which work will start at once. The company will manufacture small steel castings.

The Sharon Foundry Company, Sharon, Pa., has about completed the building of an open hearth plant to make steel castings. It will have a capacity of about 35 tons a day.

Bridges and Buildings.

The Topeka Bridge & Iron Works, Topeka, Kan., is to more than double the capacity of its plant and will install equipment for doing all kinds of concrete work.

The Insley Iron Works, Indianapolis, Ind., organized only

two months ago and ground broken for its plant only six weeks ago, is already filling contracts for structural iron and steel work. The main building, 50 x 140 feet, was under cover in less than four weeks, with engine, boiler and much other machinery in place. In the next two weeks several small contracts were filled. The starting capacity of the plant is 2000 tons a year, and the plans provide for quick work on necessary enlargements in the future.

The recent fire at the plant of the Riverside Bridge Company, Wheeling, W. Va., simply destroyed part of the building, and repairs are already being made. The plant has been in operation for over a week. None of the machinery was damaged to any extent.

The Belmont Iron Works, Twenty-second street and Washington avenue, Philadelphia, Pa., has completed its new bridge shop at Eddystone, Pa. The equipment of this shop is wholly new and of the most modern character, and the plant will have a capacity of over 1000 tons per month of all classes of structural steel for railroad and highway bridges and buildings. Structural materials of all kinds can be handled up to 25-ton pieces. The company's shop in Philadelphia will be continued in active operation. Its capacity is also 1000 tons per month. The company carries in stock from 1500 to 2000 tons of structural shapes, thus being enabled to fill orders within a reasonable time.

The Whitehead & Kales Iron Works, Detroit, Mich., has filed articles of incorporation with a paid up capital stock of \$100,000, taking over the business of Whitehead & Kales, at Beecher avenue and the Michigan Central Railroad tracks. The new company will continue in the line of structural steel and general iron work, together with the designing and building of jails and prisons. The officers are as follows: James T. Whitehead, president and treasurer; Wm. R. Kales, vice-president and engineer; James T. Warner, secretary, and Wm. H. Steger, superintendent.

Fires.

The Empire Wood & Pump Mills, at Black River, near Watertown, N. Y., were destroyed by fire November 24. The loss is about \$20,000.

The plant of the Decatur Milling Company, Decatur, Ill., was totally destroyed by fire November 24, and the plants of the Decatur Chair Company and the Decatur Furniture Company badly damaged. The loss on the milling plant was \$36,500 and on the other two \$38,000.

The wood working shop of Howarth & Rogers, Amesbury, Mass., was burned November 26, with a loss of \$25,000.

The plant of the People's Lighting, Heating & Power Company, Barre, Vt., was damaged by an explosion November 26, with loss of \$10,000.

A part of the pulp mill, including the machine shop, of the Somerset division of the United Box Board & Paper Company, Fairfield, Maine, was burned November 27, with an estimated loss of \$10,000 in addition to valuable machinery.

Hardware.

Benjamin O. Paine, Millbury, Mass., is erecting a shop for the manufacture of edge tools. His line will include Star drills, cold chisels, screw driver bits, firmer socket chisels, tang chisels, gouges, turning tools, reamers, floor chisels, shingle rippers, solid punches, rose countersink, flat countersink, center punches, tinner's punches and box chisels. Water power will be used, together with an auxiliary steam plant of 35 horse-power.

The J. S. Turner Mfg. Company, Lowell, Mass., will erect a new building which will be devoted to the manufacture of belting.

The William J. Smith Company, New Haven, Conn., has practically completed the equipment of a shop at 424 State street for the manufacture of an adjustable reamer which will soon be placed on the market. The present shop is regarded as temporary, but a complete equipment of machine tools, including special machinery, has been installed and the product will be large at this location.

Frank W. Coburn, Jr., is to establish a factory for the manufacture of knives at Farmington, N. H., and will erect a new building for the purpose, one story and 50 feet square. He will manufacture shoe knives of all descriptions, extension blades, butcher and carving knives, cigar knives, paper knives, spooler and factory knives, knives for rubber gasket and rope manufacturers, and bread and kitchen knives, including cleavers. Mr. Coburn has been connected with the cutlery firm of Frank W. Coburn & Son, Birch Hill, N. H.

National Twist Drill & Tool Company, Detroit, Mich., has recently increased its capital stock from \$40,000 to \$75,000 for the purpose of placing new machinery in the plant. During the last six months the company has been compelled to operate its factory with a day as well as night shift of men. Although a concern established less than two years, the company states that it has more business than can be taken care of with present equipment. By the first of the year, however, it is expected that

the additional equipment will be installed and in operation, more than doubling the factory's capacity.

Standard Stamping Company, Albion, N. Y., has been organized for the purpose of acquiring the property of the Standard Stamping Company, formerly of Buffalo, N. Y., and increasing the capital to take care of its expanding business. The company will manufacture fire extinguishers, bread mixers, fruit presses and a variety of household specialties. It will also do a general stamping business.

Miscellaneous.

The Amsler Engineering Company, engineer and contractor, Diamond Bank Building, Pittsburgh, has recently installed five Amsler gas producers for the Indiana Glass & Bottle Company at Cicero, Ind.; two producers of the same type for the Southern Indiana Glass Works, Loogootee, Ind., and one for the Millgrove Bottle Company, at Millgrove, Ind. The company has also built a complete blast furnace 18 x 80 feet for the Chateaugay Furnace Company, at Standish, N. Y., and is now building for the Cincinnati Southern Railroad Company new train sheds at Cincinnati, Ohio. These will have two walls of reinforced concrete each 1000 feet long, 21 feet high, one wall being 30 feet wide and the other 40 feet wide. The company is also building five concrete arches for the Big Four Railroad at Chrisman, Ill. These arches range from 16 feet span to 65 feet span.

The Matthewson Motor Car Company is erecting a new plant near Wilkes-Barre, Pa., for the building of its cars. The plant is being built and equipped under the direction of Chas. Ekstrand and will consist of a main building, 80 x 600 feet; blacksmith shop, 60 x 80 feet; boiler room, 30 x 40 feet; engine room, 30 x 40 feet; offices, 20 x 100 feet, and two lavatories, 20 x 40 feet. The buildings will be of concrete with saw tooth roof covered with slag and will be wired for incandescent lights, arc lights and power. Machinery will be grouped, each group being driven by a motor, and forced drive will be used, the blower engine for which will be furnished by the American Blower Company, Detroit, Mich. The power plant is installed in such a way that by adding another engine generator at any time the capacity will be doubled. The power plant will consist of one 150 horse-power Vulcan horizontal tubular boiler; one 12 x 13 inch direct connected Harrisburg engine; one 75-kw. 250-volt Westinghouse direct current generator; one Cochrane open type feed water heater and purifier and Blake steam pumps. Heating will be done by the blower system, exhaust steam being used, the system to be installed by the American Blower Company.

The Rector Gas Lamp Company has incorporated with a capital stock of \$125,000 and has purchased the business of the Rector Light Company, Stamford, Conn. The company is negotiating for the purchase of a factory in Wilkes-Barre, Pa., where it will manufacture a new and perfected inverted lamp.

Capitalists of Detroit, Mich., are organizing a company for the purpose of establishing a new copper and brass rolling mill. Among the subscribers to the stock of the new company are some of the strongest business men of Detroit, including George H. Barbour and Jeremiah Dwyer of the Michigan Stove Company, H. H. Anthony of the McRae Roberts Mfg. Company, Andrew H. Green of the Solvay Process Company, and Jeremiah Howe, former manager of the Detroit Copper & Brass Rolling Mills. The promoters of the company have not yet decided upon the exact location of the plant.

In the recent fire at the plant of the Gilbert & Bennett Mfg. Company, Georgetown, Conn., only one wing of the one building was burned. The company has let contracts for rebuilding and its production will not be in any way decreased. The company will build such machinery as is required to replace that burned.

The Eco Mfg. Company, 53 State street, Boston, has been organized to manufacture the Eco-Safety generator and a device for heating the pilot light tubes of steam automobiles. The generator is designed to generate and store acetylene gas under a pressure of from 25 to 75 pounds. The company plans also to manufacture automobile supplies and accessories such as lamps and speedometers. The officers are: President, Richard P. Elliott; treasurer, Josiah S. Pishon; secretary, William J. Elliott. The products of the company will be manufactured by outside parties for the present.

George Murphy, Merrimac, Mass., has just completed the erection of a brass foundry to be used in connection with his silver plating business.

The Canada Carb-ox Company has been incorporated at Winnipeg, Man., to manufacture the Carb-ox smoke consuming device. The directors of the company are J. Stuart, J. N. Yeomans, William Stephenson, all of Winnipeg, and J. W. Hayes of Chicago. Mr. Hayes is inventor and patentee of the Carb-ox system and has just completed the organization of an Illinois company. This system is a regenerative plan for increasing furnace efficiency. Mr. Hayes is located in the Hartford Building, Chicago.

The citizens of Muncie, Ind., have taken \$25,000 of stock in the American Mfg. Company and have given a site for a factory which will make numerous articles, including the Odell typewriter, sewing machines, fishing reels, flatirons, convertible trucks, &c.

The Iron and Metal Trades

So far as Pig Iron is concerned the markets have quieted down, but maintain their full strength. There have been few large transactions in Foundry grades, but some pretty good inquiries are still in the market.

The scarcity of Metal for Steel making purposes continues. Last week the leading interest purchased 25,000 tons of Basic Pig in the Eastern markets for delivery to the Pencoyd Works. This Iron takes the place of Metal which it was the original plan to ship from the Pittsburgh district, but which has now been diverted to the Steel plants there, where it was sorely needed.

For the first time in many months there has been a softening in the price of Coke, which is due to the fact that makers have rushed every available unit of plant into commission and that there has been a better supply of cars.

Merchant firms in the Lake Ore trade have been filling up their order books for deliveries of Ore during the next season. The movement, which began some time since with the booking by one large firm at an advance of 25c. per ton over last year, has now spread and buyers and sellers have met on the basis of an advance of 50c. per ton, which makes the basis for Bessemer Old Range \$4.25 for the next season. The Ore men have acted with very much more conservatism than the Coke producers.

There has been a little relief in the congestion of the Plate mills. A good deal of new work is coming up for the Structural mills in Chicago, Pittsburgh and other cities. Thus far the threatened strike of the house-smiths in New York has not affected the rolling mill programmes.

The principal Hoop mills have decreed a further advance of \$2 per ton, which puts the price up to 1.85c., Pittsburgh. Bars are stiffer and higher prices are being asked.

The international markets have been gaining in strength. The United States Steel Corporation, not having any open space for export orders before August of next year, has just authorized the booking of orders for the last half. Since the interest in question has been holding back for a month, resisting the demands of buyers, it is likely that a considerable tonnage will be booked at an early date.

An international incident has been the capture by the Steel Corporation of a round lot of Girder Rails for London tramways. Yet another English order has been recently awarded to British makers, in spite of the fact that the American bid was \$8 per ton below that of the local mills.

In the domestic Rail markets the principal transaction has been the sale of 25,000 tons additional to the Gould lines and 18,000 tons to the Lehigh Valley.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Nov. 29, Nov. 22, Nov. 1, Nov. 30,
1905. 1905. 1905. 1904.

PIG IRON:

Foundry No. 2 Standard, Philadelphia	\$18.25	\$18.25	\$17.75	\$16.50
Foundry No. 2 Southern, Cincinnati	16.75	16.75	16.25	15.75
Foundry No. 2, Local, Chicago ..	19.50	19.50	17.75	16.00
Bessemer, Pittsburgh	18.10	18.10	17.35	16.35
Gray Forge, Pittsburgh	16.85	16.75	16.35	15.85
Lake Superior Charcoal, Chicago	20.00	19.50	18.50	17.00

BILLETS, RAILS, &c.:

Bessemer Billets, Pittsburgh...	26.00	26.00	26.00	21.00
Forging Billets, Pittsburgh....	30.00	30.00	30.00	24.50
Open Hearth Billets, Phila....	30.00	30.00	28.00	....
Wire Rods, Pittsburgh	32.50	32.00	32.00	28.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	16.50	16.50	14.50	15.00
O. Steel Rails, Philadelphia....	18.25	18.25	17.50	16.00
O. Iron Rails, Chicago	23.00	23.00	22.50	22.00
O. Iron Rails, Philadelphia....	24.00	24.00	24.00	18.50
O. Car Wheels, Chicago	18.00	18.00	16.00	15.50
O. Car Wheels, Philadelphia....	17.50	17.00	17.00	14.00
Heavy Steel Scrap, Pittsburgh...	18.00	18.00	16.50	16.00
Heavy Steel Scrap, Chicago....	15.25	15.25	15.00	14.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia.	1.83½	1.83½	1.83½	1.53
Common Iron Bars, Chicago....	1.85	1.85	1.80	1.55
Common Iron Bars, Pittsburgh.	2.04½	1.80	1.80	1.54½
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.44½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.30
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.54½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.40
Beams, Tidewater, New York...	1.84½	1.84½	1.84½	1.54½
Beams, Pittsburgh	1.70	1.70	1.70	1.40
Angles, Tidewater, New York...	1.84½	1.84½	1.84½	1.54½
Angles, Pittsburgh	1.70	1.70	1.70	1.40
Skelp, Grooved Steel, Pittsburgh	1.55	1.55	1.55	1.40
Skelp, Sheared Steel, Pittsburgh.	1.65	1.65	1.65	1.50

SHEETS, NAILS AND WIRE:

Sheets, No. 27, Pittsburgh	2.20	2.20	2.15	2.10
Wire Nails, Pittsburgh	1.80	1.80	1.80	1.70
Cut Nails, Pittsburgh	1.65	1.65	1.65	1.70
Barb Wire, Galv., Pittsburgh...	2.25	2.25	2.25	2.15

METALS:

Copper, New York	17.87½	17.00	16.50	14.87½
Spelter, St. Louis	6.25	6.00	6.15	5.50
Lead, New York	5.75	5.70	5.20	4.60
Lead, St. Louis	5.55	5.50	5.15	4.40
Tin, New York	34.25	33.00	33.00	29.80
Antimony, Hallett, New York...	12.50	12.25	12.50	9.00
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.59	3.59	3.49	3.64

Chicago.

FISHER BUILDING, November 29, 1905.—(By Telegraph).

The daily increase in specifications over mill shipments, notwithstanding the relatively small tonnage of new business that is being taken, is not lessening the congestion at Western mills. November specifications received by one large interest exceeded its output from 95 to 100 per cent., and as the bulk of the tonnage specified was for immediate shipment, this would indicate that the steel consumption at present is at a record rate. The spread of \$4 to \$5 a ton between Iron and Steel Bars is no longer a factor in favor of the latter, and consumers are placing heavy orders with the Iron mills, being unable to secure early deliveries from Steel works. Owing to this heavy demand, the leading Western interest has advanced Iron Bars to 2c., although independent mills are taking business at \$2 to \$3 a ton less. The advance of \$2 a ton on Steel Hoops which was announced last week further increased the spread between this material and Bands, and the advance was made more for this reason than on account of the amount of new business that is being placed. The building outlook for 1906 is unusually bright, projects requiring fully 50,000 tons of Steel now being figured upon. The Steel for two small buildings, aggregating 3000 tons, was closed this week, and the contract for 10,000 tons of Steel for the new County Building will probably be placed before the end of the year. While there is an apparent lull in the demand for Pig Iron, considerable buying continues to be done quietly by large consumers. Coke deliveries at Western furnaces and foundries are heavier than at any time in the past three months and consumers generally are taking in all shipments and are accumulating comfortable stocks to meet the

shortage during the winter months. The continued open weather is favorable to a heavy consumption of Wire products and the November tonnage booked by the Wire mills is greatly in excess of the same months in previous years.

Pig Iron.—The market is quiet, but without loss of strength. In the absence of general buying, considerable tonnage has been taken on quietly, one large Steel foundry interest having closed at various periods during the present month for a tonnage of 25,000 to 30,000 tons with Virginia, Southern and Valley furnaces. This Iron is all for delivery through the first half of next year, and all attractive offerings were speedily accepted by this company. Considerable Low Phosphorus Iron has also been taken by the Steel foundries, and we note the sale of 2000 tons for first quarter delivery at \$26, Sharon, equivalent to \$28.30, Chicago. Several Southern producers are now quoting on the basis of \$15, Birmingham, for No. 2, but while a small tonnage was sold at this price the bulk of the tonnage continues to be placed at \$14.50. The anxiety of consumers to cover future requirements is indicated by the inquiries that are already received for deliveries running into the third quarter of 1906. Virginia furnaces are practically sold up through the first quarter, and are holding No. 2 at \$16, furnace, for second quarter delivery. Lake Superior Charcoal furnaces are heavily booked, and it is reported that they have made further sales of large tonnages in the East during the week. Prices have been again advanced 50c. a ton, and further advances are anticipated. We revise Chicago quotations as follows:

Lake Superior Charcoal.....	\$20.00 to \$20.50
Northern Coke Foundry, No. 1.....	20.00 to 20.25
Northern Coke Foundry, No. 2.....	19.50 to 19.75
Northern Coke Foundry, No. 3.....	18.75 to 19.25
Northern Scotch, No. 1.....	20.00 to 20.50
Ohio Strong Softeners, No. 1.....	20.05 to 20.30
Ohio Strong Softeners, No. 2.....	19.55 to 19.80
Southern Coke, No. 1.....	18.65 to 19.15
Southern Coke, No. 2.....	18.15 to 18.65
Southern Coke, No. 3.....	17.65 to 18.15
Southern Coke, No. 4.....	17.15 to 17.65
Southern Coke, No. 1 Soft.....	18.65 to 19.15
Southern Coke, No. 2 Soft.....	18.15 to 18.65
Southern Gray Forge and Mottled.....	16.65 to 17.15
Malleable Bessemer.....	19.50 to 20.00
Standard Bessemer.....	19.30 to 19.55
Southern Basic.....	18.65 to 19.15
Jackson Co. and Kentucky Silvery, 6 %.....	18.80
Jackson Co. and Kentucky Silvery, 8 %.....	20.80
Jackson Co. and Kentucky Silvery, 10 %.....	22.30

Metals.—Further advances have been made in Copper and the scarcity of the product indicates still higher prices. Tin has also advanced, while Lead continues scarce and in heavy demand. We quote: Casting Copper, 18½c. to 18¾c.; Lake, 18½c. to 18¾c.; Pig Tin, car lots, 34½c. to 35c.; small lots, 35½c. to 36c.; Spelter, prompt delivery, 6¼c. to 6½c. for car lots; Lead, Desilverized, 5¾c.; Corroding, 6c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is \$7.50, list, f.o.b. LaSalle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 15½c.; Heavy Copper, 15c.; Copper Bottoms, 14c.; Copper Clips, 14¼c.; Red Brass, 13¾c.; Red Brass Borings, 11½c.; Yellow Brass, Heavy, 10¼c.; Yellow Brass Borings, 8¾c.; Light Brass, 8c.; Lead Pipe, 4¾c.; Tea Lead, 4¼c.; Zinc, 4.65c.; Pewter, No. 1, 21c.; Block Tin Pipe, 27½c.

(By Mail.)

Billets.—While specifications continue heavy, new business that is being placed with the mills is light, and as only a few small producers are in position to take on prompt business they are quoting on the basis of \$34 and \$35, flat, f.o.b. Chicago:

Rails and Track Supplies.—Considering the season, the demand for Light Rails continues very heavy and the total tonnage closed during the present month is equal to that taken on during October. The demand was largely for 35 and 45 lb. sections, which would indicate that small roads have been buying on account of their inability to secure Standard Sections for prompt delivery. Specifications for track material continue very heavy and mills that are not in position to make prompt deliveries of both Bolts and Pipes are receiving as high as 3c. for the former and 2c. for the latter. Quotations remain unchanged, as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 1.85c. to 1.95c.; Track Bolts, 2.50c. to 2.60c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 lb. to 45 lb. Sections, \$26 to \$26.50; 25-lb., \$27 to \$27.50; 20-lb., \$28 to \$28.50; 16-lb., \$29 to \$29.50; 12-lb., \$30 to \$30.50; lighter Sections down to 8-lb., \$35 to \$38, f.o.b. mill. Standard Sections are quoted \$28, f.o.b. mill, full freight to destination.

Structural Material.—Contracts for additions to the Auditorium annex and to the Fisher Building, aggregating 3000 tons, were placed this week, the Carnegie Steel Company securing the former and the American Bridge Company the latter. All bids on the Northwestern Elevated extension, requiring about 8000 tons of material, have been thrown out on account of changes that are to be made in the specifications, and it is now hardly probable that this

tonnage will be let until after the first of the year. Bids will shortly be asked for furnishing the Steel for the new county building, which will require about 10,000 tons of material. Buillings already projected for erection next year from present estimates will require a total of 50,000 tons of Structural Material. Among the large structures are the following: Columbian Museum, Polk and Union stations, addition to Carson, Pirie, Scott & Co., an addition to Marshall Field & Co., wholesale store, and an addition to the Pike Building. Contracts are now being placed for Hard Angles by the bedstead makers and prevailing prices range from 1.65c. to 1.75c. on the various sections. Quotations are unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.86½c.; Angles larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work. Store prices on Angles, Beams and Channels range from 2c. to 2.25c., according to quantity on hand, in store or obtainable from mill.

Plates.—Mills are now making better deliveries on Plates than they have been for some time, which is largely due to the small amount of new business that has been taken on during the past five or six weeks. While specifications continue very heavy they are by no means in excess of the output and consequently deliveries on almost all sizes can be promised in less than two weeks. Prices are firm but unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.10c. to 2.15c.; Flange quality, 25c. extra.

Sheets.—Large consumers generally closed contracts for their future requirements before the recent advance was announced and the only new business that has been closed on the new basis calls for small lots for immediate shipment. Manufacturers of special Sheets report well filled order books, and during the last few years the independent manufacturers to a large extent have been catering to this trade in order that they would not be compelled to compete with the leading interest on ordinary material. Jobbers are doing a good business and the slight advance in prices has not affected demand. We quote: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Box Annealed, Nos. 18 and 20, 2.21½c. to 2.26½c. No. 27, 2.36½c. to 2.41½c.; No. 28, 2.46c. to 2.51½c., with the customary differential between gauges. Store prices are 2.05c. to 2.15c. for No. 10 Blue, 2.15c. to 2.20c. for No. 12 Box, 2.25c. to 2.30c. for No. 14, 2.35c. to 2.40c. for No. 16, 2.45c. to 2.55c. for Nos. 18 and 20, 2.60c. for Nos. 22 and 24, 2.65c. to 2.70c. for No. 26, 2.70c. to 2.75c. for No. 27, 2.75c. to 2.85c. for No. 28, 3c. to 3.10c. for No. 30. Galvanized Sheets, in car lots from mill: No. 10, 2.46½c. to 2.51½c.; Nos. 17 to 21, 2.81½c. to 2.86½c.; No. 27, 3.31½c. to 3.36½c.; No. 28, 3.51½c. Store prices on Galvanized Sheets are revised as follows: Nos. 10 to 14, 3.20c. to 3.30c.; Nos. 16 to 20, 3c. to 3.10c.; Nos. 22 to 24, 3.10c. to 3.25c.; No. 26, 3.30c. to 3.35c.; No. 27, 3.50c. to 3.55c.; No. 28, 3.70c. to 3.75c.

Bars.—The advance of \$2 a ton in Hoops was entirely unexpected and was made in the absence of any noteworthy buying movement. This advance increases the spread between Hoops and Bands from \$3 to \$5 a ton, which is considered a normal difference in the cost of this material. The inability of consumers to secure immediate deliveries on Steel Bars has resulted in turning considerable tonnage to the Iron mills, with the result that prices of the latter continue to advance almost every week. The leading interest is now quoting on the basis of 2c., Chicago, which is an advance of \$3 a ton in less than ten days. Outside mills, of course, are taking on business at a lower basis, but their order books are fast filling up and the indications are that the 2c. basis will be the established market in less than a week. We revise quotations as follows: Iron Bars, 1.85c. to 1.90c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.01½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.76½c., half extras, and Hard Steel Angles and Bars at about 10c. below the price of Soft Steel. In store prices Steel Bars and Bands are being held at a minimum of 1.85c., base, half extras; Steel Angles and Shapes, 1.95c., half extras, and Soft Steel Hoops, 2.30c., full extras, with 5c. to 10c. higher than the minimum prices named for small quantities from store.

Merchant Steel.—Shafting manufacturers are now closing contracts with consumers for 1906 requirements at prices now prevailing. Considerable tonnage has already been booked and from present indications practically all heavy

requirements will be covered before the middle of the month. Planished or Smooth Finished Tire Steel, 1.70c.; Iron finish up to $1\frac{1}{2}$ x $\frac{1}{2}$ inch, 1.65c., and Iron finish $1\frac{1}{2}$ x $\frac{1}{2}$ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: $\frac{3}{4}$, $\frac{7}{8}$ and 1 inch, 2c., and $1\frac{1}{2}$ -inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91 $\frac{1}{2}$ c.; Flat Sleigh Shoe, 1.71 $\frac{1}{2}$ c.; Concave and Convex Sleigh Shoe, 1.86 $\frac{1}{2}$ c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21 $\frac{1}{2}$ c.; Railway Spring, 1.86 $\frac{1}{2}$ c.; Crucible Tool Steel, 6 $\frac{1}{2}$ c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Merchant Pipe.—Only a moderate tonnage is being closed by the mills, which is almost entirely due to the fact that large jobbers and consumers placed their contracts some time ago. Demand from jobbers' stocks is falling off slightly, which is anticipated at this season of the year. Current discounts continue to be fairly well maintained, although here and there some shading is reported, but it is by no means general. Official discounts are as follows: Black Steel Pipe, 78.35 per cent. on the base sizes, $\frac{3}{4}$ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from $1\frac{1}{2}$ to 2 points higher. From store in small lots Chicago jobbers are quoting 76 $\frac{1}{2}$ to 77 per cent. on Black Steel Pipe, $\frac{3}{4}$ to 6 inches.

Boiler Tubes.—The local demand continues limited almost entirely to shipments from jobbers' stocks. Official discounts, f.o.b. Chicago, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to $1\frac{1}{4}$ inches.....	40	35	42 $\frac{1}{2}$
$1\frac{3}{4}$ to $2\frac{1}{4}$ inches.....	50	35	35
$2\frac{1}{2}$ inches.....	52 $\frac{1}{2}$	35	30
$2\frac{3}{4}$ to 5 inches.....	60	47 $\frac{1}{2}$	42 $\frac{1}{2}$
6 inches and larger.....	50	35	..

Cast Iron Pipe.—Western municipalities are not yet considering 1906 requirements, and it is doubtful if any tonnage will be placed until after the first of the year. Recent advances in Pig Iron resulting in higher prices for Pipe have not affected the tonnage that is being figured on by some of the Western gas companies, but it is possible if prices go too high their requirements will be considerably curtailed. We quote, f.o.b. Chicago, per net ton: Water Pipe, 4-inch, \$31; 6, 8, 10 and 12 inch, \$30; over 12-inch, \$29, with \$1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Coke.—The continued open weather is favorable for the movement of Coke from both the Connellsville and Virginia fields, and as the car supply in these districts has materially increased there has been no shortage of Coke in this market during the past few weeks. Prices have accordingly become easier, and Connellsville Coke has sold here during the week on the basis of \$3.50 at the ovens, although the prevailing price is \$3.60 to \$3.75, while Wise County Coke has sold at \$3.90 to \$4. By-product contracts are now being closed to cover requirements during the first half of next year on the basis of about \$3.60 to \$3.75 for Connellsville Coke at the ovens, which is equivalent to \$6.25 to \$6.40, Chicago. Local furnaces all practically covered their Coke requirements for the first half of next year several months ago.

Old Material.—Dealers continue to pay high prices to the railroads for such material as Heavy Melting Steel and Wrought Scrap, and it was reported that last week as high as \$19 was paid the Chicago, Burlington & Quincy Road for its lot of Wrought, which is fully 50c. a ton higher than has yet been paid in this market by a consumer. Why the dealers are paying these high prices is hard to understand, unless they have sold the market short and are endeavoring to cover. The only list that will be closed this week is that issued by the Chicago & Eastern Illinois, which disposes of only a small assortment. Further shipments of Heavy Melting Steel to the Pittsburgh district, aggregating 5000 tons, have gone forward, and it is probable that additional shipments will be made in the near future. The range prices paid by large consumers to producers and dealers, carload lots, f.o.b. Chicago, are as follows:

Old Iron Rails.....	\$23.00 to \$23.50
Old Steel Rails, 4 feet and over.....	16.50 to 17.00
Old Steel Rails, less than 4 feet.....	16.50 to 17.00
Heavy Relaying Rails, subject to inspection.....	26.50 to 27.00
Old Car Wheels.....	18.00 to 18.50
Heavy Melting Steel Scrap.....	15.25 to 15.50
Frogs, Switches and Guards.....	15.75 to 16.25
Mixed Steel.....	13.00 to 13.50

The following quotations are per net ton:

Iron Fish Plates.....	\$20.50 to \$21.00
Iron Car Axles.....	23.50 to 24.00
Steel Car Axles.....	18.00 to 18.50
No. 1 Railroad Wrought.....	18.00 to 18.50
No. 2 Railroad Wrought.....	17.00 to 17.50
Locomotive Tires, smooth.....	14.25 to 14.50
Railway Springs.....	15.00 to 15.50
No. 1 Dealers' Forge.....	14.00 to 14.50
Wrought Pipes and Elbows.....	12.50 to 13.00
Mixed Bushing.....	12.50 to 13.00
Iron Axle Turnings.....	12.50 to 13.00
Soft Steel Axle Turnings.....	12.50 to 13.00
Machine Shop Turnings.....	12.00 to 12.50

Cast Borings.....	10.00 to 10.50
Mixed Borings, &c.....	9.75 to 10.00
No. 1 Mill.....	10.00 to 10.50
Country Sheet.....	9.00 to 9.25
No. 1 Boilers, cut to Sheets and Rings.....	12.00 to 12.50
No. 1 Cast Scrap.....	15.00 to 15.50
Stove Plate and Light Cast Scrap.....	12.00 to 12.50
Railroad Malleable.....	15.00 to 15.50
Agricultural Malleable.....	14.50 to 15.00

A. H. Carpenter, formerly in charge of the Coal and Coke department of the Tennessee Coal, Iron & Railroad Company, Birmingham, Ala., has been appointed manager of the Chicago office of this company. An office will be opened in the Rookery Building about the middle of December.

Philadelphia.

REAL ESTATE TRUST BUILDING, November 28, 1905.

The market for Iron and Steel has been a little quiet during the past week, although it is recognized that the situation is gradually becoming stronger. The falling off in the demand is quite natural and is really a good thing, as it will give an opportunity to catch up a little and to take fresh bearings in regard to the outlook. So far the result has been entirely satisfactory, as there is plenty of work to go on with even if orders were totally suspended during the remainder of the year. There is always a certain amount of day to day business, however, and it is this that goes a long way toward establishing prices, and from this point of view the market has an extremely robust appearance. Prices are only slightly higher, but whatever changes have been made are all in seller's favor. At the moment, however, it cannot be said that much higher prices are expected. The statement made by the *Bulletin* of the American Iron and Steel Association that the capacity for the production of Pig Iron on the first of the month was 28,635,000 tons per annum and that another 1,000,000 tons capacity will be added by February 1 gives something of a pause to extremely optimistic views, but it must be remembered that it is at no time possible to use the full capacity, and with the present outlook it will be fortunate if the October output can be maintained during the winter months. The shortage of rolling stock is severely felt and while this continues there is but little chance of increasing outputs in any line. Requirements are very large, however, and if the stuff could be had there is hardly a limit to the quantity that would be taken, although, of course, the pressure is greater in some lines than in others. It is difficult to indicate with any degree of confidence just what will happen during the winter months. The unrest in labor is somewhat disquieting and there are other matters which might develop disagreeable consequences, so that while the general outlook is excellent it will not be safe to assume that there is no possibility of setbacks.

Pig Iron.—The market has not been very active but prices have been firmly maintained and in some cases have been marked to slightly higher figures. There appear to be fairly good supplies of Foundry and Mill Irons, but there is a scarcity for Steel making purposes that amounts to almost a veritable famine. Basic Iron has been sold in considerable quantities at \$17.75, delivered, and more money would be paid for December and January shipments, but everything appears to be sold close up. As a matter of fact it would be difficult to buy any delivery at less than about \$18, although it is not offered at that figure, as there is practically no Basic Iron for sale. Low Phosphorus Iron is still more scarce and it is hard to say what the price would be providing the article could be offered. Foundry Irons, as already mentioned, are in fairly good supply at an average price of about \$18.50 for No. 2 X. Some appear willing to accept \$18.25, while others hold for \$18.75. It is the kind of market in which sellers make their own prices. If they think a regular buyer is entitled to Iron at \$18.25 they enter his order. Others who have very little for sale quote \$18.50, while a few who consider their product better than most others quote \$18.75, with sales at all the figures named. Mill Irons are steady but not very active, although they command the full prices of last week. Southern Irons are available at unchanged prices for furnace deliveries, but the advance in freights adds about 50c. to the delivered prices, the range for which is about as follows for Philadelphia and nearby districts:

No. 1 X Foundry.....	\$19.00 to \$19.25
No. 2 X Foundry.....	18.25 to 18.75
No. 2 Plain.....	17.75 to 18.00
No. 2 Southern.....	18.50 to 18.75
Standard Gray Forge.....	16.25 to 16.50
Basic.....	17.75 to 18.00
Low Phosphorus.....	24.00 to 24.50
Bessemer.....	19.50 to 19.75
Malleable Iron.....	18.50 to 19.00

Ferromanganese.—The situation has been somewhat relieved by the arrival in port of about 200 tons. This has been distributed around so that the urgency for spot lots is not quite as great as it was, although a few small lots were taken at \$90 to \$100 per ton. Further arrivals are expected next week but only small lots. Thousand-ton lots are

wanted for shipment during the first half of 1906, with \$75 bid, and for the last half \$65 to \$70 is quoted, but no business of this character has been done so far as known.

Silico Spiegel is quoted at \$37.50 to \$40 (10 per cent. Silicon and 20 per cent. Spiegel) and can be had with reasonable promptness at these figures.

Spiegeleisen is quoted at about \$34 for 20 per cent.

Ferrosilicon is quoted at \$30 for 12 per cent. and \$94 to \$96 for 50 per cent.

Steel.—There is a good demand and sales can be readily made at about \$30 if satisfactory deliveries can be arranged. Small lots bring \$32 to \$35; Forging Billets, \$38 to \$40.

Muck Bars.—There is more doing, with sales at \$28, seller's mill, but an advance of 25c. to 50c. is now asked.

Plates.—There is a good demand at unchanged prices. Mills have a great deal of work on their books and have added a considerable tonnage during the past few days, while prospects are satisfactory in all respects. Prices are as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial		
Fire Box Steel.....	1.93½	1.98½
Still Bottom Steel.....	2.03½	2.08½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. The following extras apply:		
3-16-inch thick.....	\$0.10	pounds extra.
Nos. 7 and 8, B. W. G.....	.15	"
No. 9, B. W. G.....	.25	"
Plates over 100 to 110 inches.....	.05	"
Plates over 110 to 115 inches.....	.10	"
Plates over 115 to 120 inches.....	.15	"
Plates over 120 to 125 inches.....	.25	"
Plates over 125 to 130 inches.....	.50	"
Plates over 130 inches.....	1.00	"

Structural Material.—It seems hardly worth while to refer to this line of material, as everything is on a dead level. Official prices are the same as they have been for months past, but selling prices are too variable to be given with any degree of definiteness. The question of deliveries is the most difficult matter to arrange, but when that can be done to the buyer's satisfaction sellers fix their own prices.

Bars.—There is a good demand, but shipments are mostly against old contracts made at prices below those now ruling. New business is taken at 1.83½c. for best Refined Iron, although some quote a little more than that. Steel Bars are nominally 1.63½c., but to get anything like decent deliveries one or two tenths more must be paid.

Sheets.—The demand is very much better and prices are a tenth higher all around. The following are mill prices, lots from store carrying the usual additions on these quotations: 18 to 20 gauge, 2.40c.; 22 to 24 gauge, 2.50c.; 25 and 26 gauge, 2.60c.; 27 gauge, 2.70c., and 28 gauge, 2.80c.

Old Material.—The demand is not particularly active, although prices are maintained at the full figures recently quoted. Buyers complain that as soon as they buy anything shipments are pushed forward regardless of the terms of contract, resulting in a great deal of annoyance and in some cases placing them under an embargo. This may be strictly true, yet it is noticeable that they still keep on buying at prices within the following range (delivered buyers' yards):

Scrap Steel Rails.....	\$18.25 to \$18.50
No. 1 Steel Scrap.....	17.50 to 18.00
Low Phosphorus Scrap.....	23.00 to 23.50
Old Steel Axes.....	21.50 to 22.50
Old Iron Axes.....	27.50 to 28.00
Old Iron Rails.....	24.00 to 25.00
Old Car Wheels.....	17.50 to 18.00
Choice Scrap, R. R. No. 1 Wrought.....	22.50 to 23.00
No. 1 Yard Scrap.....	20.00 to 20.50
Long and Short.....	19.00 to 19.50
Machinery Scrap.....	16.00 to 16.50
Wrought Iron Pipe.....	16.75 to 17.25
No. 1 Forge Fire Scrap.....	16.00 to 16.50
No. 2 Light Ordinary.....	13.00 to 13.50
Wrought Turnings.....	14.50 to 15.00
Axle Turnings, Choice Heavy.....	15.50 to 16.00
Cast Borings.....	10.75 to 11.25
Stove Plates.....	13.25 to 13.75
Grate Bars.....	12.75 to 13.00

Cabeen & Co., Iron and Steel brokers, have removed their offices to 910 Arcade Building. This is a most convenient location, and especially to the out of town trade, as it is an annex of the Pennsylvania Railroad Station, Fifteenth and Market streets.

The Danville Belt Coal Company, Danville, Ill., has incorporated with a capital stock of \$300,000 and has taken over the holdings of the Eastern Illinois Coal Company. The company will own 2100 acres of land through which it will construct a belt line, connecting every railroad entering the city. Along the line of the railroad factory sites will be given free to desirable industries which will have the advantages of cheap coal at their doors and excellent shipping facilities.

Pittsburgh.

PARK BUILDING, November 29, 1905.—(By Telegraph.)

Pig Iron.—The month of December is usually a dull buying month, when consumers of Pig Iron commence to take inventory and do not care to take in any more Pig Iron than absolutely necessary. For this reason no large lots have been sold. The market, however, is very firm, Bessemer and Basic being held on the basis of \$17.50 at Valley furnace, but it is possible a few odd lots might be picked up at \$17.25 at furnace. One of the leading Steel interests is expected to buy a round tonnage of Bessemer and Basic Iron for first quarter delivery. Consumers of Foundry Iron are pretty well covered ahead and buying is light and for small lots only. We quote Northern No. 2 Foundry at \$17.50, Valley furnace, or \$18.35, Pittsburgh. This price is being very firmly held by practically all of the furnaces. There is a fair inquiry for Forge Iron, and several sales of Northern makes were made last week at \$16, Valley furnace, or \$16.85, Pittsburgh. The market to-day, however, is firmer and a sale of 500 tons is reported at \$16.40, Valley, or \$17.25, Pittsburgh.

Steel.—There is not much new demand for Steel, most consumers being covered by contracts. Both Bessemer and Open Hearth Billets continue scarce for prompt shipment, and the mills are behind in shipments, especially on Sheet and Tin Bars. We quote Bessemer Billets at \$26; Open Hearth Billets, \$27, maker's mill; Sheet and Tin Bars in random lengths, \$27.

Muck Bar.—We note a very sharp advance in the price of Muck Bar, and the leading seller reports sales of considerable tonnage on the basis of \$32, Pittsburgh. The market is very firm to-day at this price, and Muck Bar for early shipment is scarce.

Iron Bars.—The Republic Iron & Steel Company has advanced its price on Iron Bars \$2 a ton, or to the basis of 2c., Youngstown, which is equal to 2.04½c., Pittsburgh. This is the highest price which Iron Bars have reached in some years.

(By Mail.)

We are now within one month of the close of the year and it would not be surprising if the market shows a lull during December and perhaps a slight recession in prices on raw material, such as Pig Iron, Steel, Scrap and Coke. The situation in Coke is already easier, consumers having no trouble now in getting prompt shipments and at slightly lower prices than prevailed two weeks ago. There are no large inquiries for Pig Iron in the market, leading consumers being pretty well covered for some time ahead. It is not likely that the United States Steel Corporation will do anything in regard to buying Bessemer Iron for first quarter until late in December, if then. In the absence of any large sales of Bessemer and Basic, prices continue reasonably firm on the basis of \$17.50 at Valley furnace, but it is probable that \$17.25 could be done on small lots held by dealers and outside furnaces. Foundry Iron is in fair demand, Northern brands of No. 2 being held at \$17.50 to \$18 at Valley furnace. There have been several fair sized sales of Forge Iron at \$16, Valley, or \$16.85, Pittsburgh. The Steel market continues quiet, but prices are very firm, on the basis of about \$26 for Bessemer and \$27 for Open Hearth Billets. Tonnage in Finished Iron and Steel continues heavy, and the mills are swamped with specifications. Tin Plate and Sheets are in better demand than for some time and the American Sheet & Tin Plate Company is starting up additional hot mills in its Tin Plate plants. An advance of \$2 a ton was made last week on Steel Hoops, making these 1.85c., Pittsburgh.

Ferromanganese.—It is stated that as high as \$125 a ton has been paid for foreign 80 per cent. Ferro for spot shipment, the American Steel Company of this city reporting a sale of about 25 tons at this price. It is practically impossible to get prompt shipments, and those who must have it or shut down their plants are willing to pay almost any figure for it. There does not seem to be much prospect of any increase in the supply for some little time.

Steel Rails.—Orders for Rails continue to come into the mills in large volume, and some large contracts have been placed since our last report. The Western roads have placed recently nearly 50,000 tons, mostly with the Illinois Steel Company, a part of which tonnage has been transferred to the Carnegie Steel Company and will be rolled at the Edgar Thomson mill. There is a good demand for Light Rails, and specifications are crowding in on the mills at a very rapid rate. Prices are very firm, and we quote Light Rails as follows: 8-lb., \$36 to \$37; 10-lb., \$32 to \$33; 12-lb., \$29 to \$30; 16-lb., \$27 to \$28; 25-lb. to 45-lb., \$26 to \$26.50, all f.o.b. cars, maker's mill. We understand that some mills are quoting Light Rails at about \$1 a ton higher than above prices.

Rods.—The two leading local interests that roll Rods are out of the market as sellers, needing their entire output for their Wire mills. Prices are firm, and we quote Bessemer and Open Hearth Rods at \$32.50 to \$33, and Open Hearth Chain Rods at \$33, maker's mill.

Skelp.—The demand is quite heavy and the mills are still behind in shipments. Prices are firm and we quote: Grooved Steel Skelp, 1.55c. to 1.60c.; Sheared, 1.65c. to 1.70c.; Grooved Iron Skelp, 1.65c. to 1.70c., and Sheared, 1.75c. to 1.80c. These prices are for ordinary widths and are f.o.b. maker's mill.

Plates.—The mills are still congested with tonnage and specifications on contracts, and new orders are coming in in very heavy volume, so that deliveries from the mills are about as far behind as ever. Indications point to an advance in price, owing to the strong pressure from those Eastern mills who buy Plate Slabs in the open market and are now paying from \$27 to \$28 a ton for them. Mills that can make fairly prompt shipment are asking premiums in prices and are getting them. The Steel car interests are using an enormous tonnage of Plates and will continue to do so for some months, as they are filled up with orders for cars far into next year. We quote: Tank Plates, $\frac{1}{4}$ inch thick, $6\frac{1}{4}$ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than $\frac{1}{4}$ -inch to and including 3-16-inch Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)....	.10
Complete Circles.....	.20
Boller and Flange Steel Plates.....	.10
Marine, "A. B. M. A." and ordinary Fire Box Steel Plates.....	.20
Still Bottom Steel.....	.30
Locomotive Fire Box Steel.....	.50
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of $\frac{1}{2}$ of 1 per cent. is allowable. Pacific Coast base, 1.40c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Structural Material.—The Carnegie Steel Company turned over its new Structural mill at the Clairton Works last week and the mill was put in regular operation November 27, the first order placed with it being one for 10,000 tons of Beams of one size. The mill will roll the medium sizes of Structural Steel up to 9 inches and will turn out about 9000 tons a month. No large local contracts have been placed recently, but bids for the new Union National Bank Building will soon be ready, which will take about 8000 tons. The mills are still very much behind in deliveries and do not seem to be catching up to any extent. We quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x $\frac{1}{4}$ inch thick up to 6 x 6 inches, 1.70c.; 8 x 8 and 7 x 3 $\frac{1}{2}$ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Sheets.—We are advised that the recent advance of \$2 a ton is being firmly held and a fair amount of new tonnage is being placed. However, many of the large consumers covered their wants for some time ahead before the advance was made. The market is firm and we quote: Black Sheets, Box Annealed, one pass through cold rolls, 10 to 12 gauge, 1.90c.; Nos. 13 and 14, 1.95c.; Nos. 15 and 16, 2c.; Nos. 17 to 21, 2.05c.; Nos. 22 to 24, 2.10c.; Nos. 25 and 26, 2.15c.; No. 27, 2.20c.; No. 28, 2.30c.; No. 29, 2.45c., and No. 30 gauge, 2.55c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.25c.; Nos. 12 to 14, 2.35c.; Nos. 15 and 16, 2.45c.; Nos. 17 to 21, 2.60c.; Nos. 22 to 24, 2.75c.; Nos. 25 and 26, 2.95c.; No. 27, 3.15c.; No. 28, 3.35c.; No. 29, 3.60c., and No. 30, 3.85c. We quote No. 28 gauge Painted Roofing Sheets at \$1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at \$2.90 per square for 2 $\frac{1}{2}$ -inch corrugations. Jobbers charge the usual advances over above prices for small lots from store.

Iron and Steel Bars.—Specifications on contracts for Steel Bars continue very much heavier than shipments from the mills, which are getting further behind on deliveries than ever. The same is largely true of Iron Bars. Some great records for output are being made on the continuous Bar mills of the Carnegie Steel Company at Duquesne, and by the Jones & Laughlin Steel Company of this city. We quote Iron Bars at 2c., Youngstown, or 2.04 $\frac{1}{2}$ c., Pitte-

burgh, and Steel Bars at 1.50c., base, half extras, for carloads and larger lots.

Hoops and Bands.—The four mills rolling Hoops and Bands, these being the Carnegie Steel Company, Pittsburgh Steel Company, Sharon Steel Hoop Company and Atlanta Steel Hoop Company, have advanced prices \$2 a ton. Specifications on contracts are very heavy, but only a fair amount of new tonnage is being placed, most of the large buyers having covered before the advance. We quote Steel Hoops at 1.85c. and Bands to be used for cooperage purposes at 1.85c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—The demand is much heavier than usual at this season of the year, and the American Sheet & Tin Plate Company has started up its Monongahela Works and is getting ready to start its Star Works in this city. Ten more hot mills at the Shenango Works, New Castle, have been started. The company is now operating over 75 per cent of its Tin Plate capacity. The outside mills also report a visible increase in tonnage. We quote Tin Plate at \$3.40 per base box, f.o.b. Pittsburgh, for 14-x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days. Some mills allow a rebate of 5c. a box on the above price to the large trade.

Merchant Steel.—Specifications on contracts are coming in so fast that the mills are getting more and more behind on deliveries. A few that can make fairly prompt shipments are asking slight premiums in prices. The market is very firm and we quote: Smooth Finished Tire, 1.70c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. The demand for Shafting is quite heavy, which we quote at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory. On some very desirable contracts recently placed the lower discount has been shaded.

Railroad Spikes.—The mills are filled up with orders for several months and are somewhat behind in deliveries. Prices are very firm and we quote \$2 to \$2.05 per 100 lbs., f.o.b. maker's mill.

Spelter.—We note an excellent demand and the market is very firm. We quote prime Western grades at 6c., St. Louis, or 12 $\frac{1}{2}$ c., Pittsburgh.

Merchant Pipe.—The tonnage continues quite heavy and the mills are well filled up for several months ahead. There are no indications as yet of any betterment in prices, although Pipe is undoubtedly the cheapest article on the whole list. Mills that have to buy Skelp and put it into Pipe at present prices cannot do more than come out whole at that. The discounts named below do not represent the extreme of the market, and to some mills are probably less than cost. Official discounts are as follows:

Merchant Pipe.							
Jobbers, carloads.—				Consumers, carloads.—			
Steel.				Iron.			
Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.	Blk. Galv.
$\frac{1}{4}$ and $\frac{1}{2}$ inch.....	73	58	69 $\frac{1}{2}$	53 $\frac{1}{2}$	71	55	68 $\frac{1}{2}$
$\frac{3}{8}$ and $\frac{1}{2}$ inch.....	76	64	73 $\frac{1}{2}$	61 $\frac{1}{2}$	75	63	72 $\frac{1}{2}$
$\frac{3}{4}$ to 6 inches.....	80	70	78	68	79	69	77
7 to 12 inches.....	75	60	73	57 $\frac{1}{2}$	74	59	72
Extra strong, plain ends:							
$\frac{1}{4}$ to $\frac{3}{8}$ inch.....	65	53	62 $\frac{1}{2}$	50 $\frac{1}{2}$	64	52	61 $\frac{1}{2}$
$\frac{1}{2}$ to 4 inches.....	72	60	69 $\frac{1}{2}$	57 $\frac{1}{2}$	71	59	68 $\frac{1}{2}$
$\frac{1}{2}$ to 8 inches.....	68	56	65 $\frac{1}{2}$	53 $\frac{1}{2}$	67	55	64 $\frac{1}{2}$
Double extra strong, plain ends:							
$\frac{1}{2}$ to 8 inches.....	61	50	58 $\frac{1}{2}$	47 $\frac{1}{2}$	60	49	57 $\frac{1}{2}$

Boiler Tubes.—Current tonnage is fairly large, while specifications on contracts are coming in very freely. Prices are reasonably firm, but are shaded in exceptional cases by one or two mills. Discounts are as follows:

Boiler Tubes.		
	Iron.	Steel.
1 to 1 $\frac{1}{2}$ inches.....	41	44
1 $\frac{1}{2}$ to 2 $\frac{1}{4}$ inches.....	41	56
2 $\frac{1}{4}$ to 3 inches.....	46	58
3 to 5 inches.....	53	64
6 to 13 inches.....	41	56

On Boiler Tubes, 2 $\frac{1}{2}$ inch and smaller, over 18 feet long, 10 per cent. net extra, and on 2 $\frac{1}{2}$ inch and larger over 22 feet long, 10 per cent. net extra.

Coke.—For the first time in some weeks we can report a softening in prices, which is explained by the fact that practically every oven in the Connellsville region, and in the outside districts as well, that can make Coke is in blast, while the car supply has visibly improved and there is no longer serious trouble in getting prompt delivery of both Furnace and Foundry Coke. The easing up in prices of Coke is more on the cheaper grades, or on what is known as "High Sulphur Connellsville Coke." This is Coke that is made outside of the Connellsville region proper and runs higher in sulphur and a little lower in carbon than the

genuine Connellsville Coke. We quote strictly Connellsville Furnace Coke at \$2.85 to \$2.90 a ton at oven, while the best grades of 72-hour Foundry Coke continue to be held at about \$3.50 a ton at oven, but Foundry Coke for spot delivery has sold as high as \$3.75 to \$4 a ton at oven. Outside makes of Furnace Coke are being offered as low as \$2.40 a ton at oven. The output of Coke continues enormously heavy, the Upper and Lower Connellsville regions having made last week over 370,000 tons.

Iron and Steel Scrap.—It is now getting toward the close of the year when consumers do not care to take in more material than they are compelled to, while in addition leading consumers of Wrought Scrap and some other grades are pretty well covered, so that the tonnage of Scrap that is being sold is relatively small. In the past month the Illinois Steel Company has shipped 10,000 tons of Heavy Melting Scrap to the Carnegie Steel Company, to be used in its mills in the Pittsburgh district. Dealers quote as follows: Heavy Melting Scrap, \$18 to \$18.50; No. 1 Wrought Scrap, \$20 to \$20.50; Bundled Sheet Scrap, \$15.50 to \$16; Cast Iron Borings, \$10.50 to \$10.75; Machinery Cast Scrap, \$15.50 to \$16; Cast Steel Scrap, \$17.50 to \$18; Old Steel Rails, short pieces, \$18 to \$18.50; long pieces, \$17.50 to \$18; Old Iron Rails, \$23 to \$24; Old Car Wheels, \$18 to \$19, all in gross tons, f.o.b. Pittsburgh.

Cleveland.

(By Telegraph.)

CLEVELAND, OHIO, November 29, 1905.—Official statements made to-day are to the effect that buying of Ore has been started for next year's delivery on a liberal scale. The basis of prices is \$4.25, f.o.b. Lake Erie ports, for Bessemer Old Range, with the usual differentials in the other grades. No estimates are as yet made of the amount of Ore sold, but all reports indicate that the buying has been heavy and that the movement to cover next year's requirements is well under way. Mine owners make the statement that the basis of prices has been fairly well established at 50c. advance over 1905 figures.

(By Mail.)

CLEVELAND, OHIO, November 28, 1905.

Iron Ore.—The demand for vessel tonnage in this territory has not been so keen during the past week. The excessive rates paid a week ago have passed out of use and at the opening of this week a few wild boats were placed at \$1 from the head of the lakes to Ohio ports and 90c. from Escanaba. A few cargoes have been placed at slightly higher figures. The good weather generally prevailing in the Northwest during the past week has facilitated loading, one boat being able to make the best loading record of the year. It took on over 9500 tons in 1 hour and 50 minutes. The movement has been heavy enough to warrant the estimates on the part of some shippers that the total lake movement for the year will exceed 33,000,000 tons. The movement to the end of October was a little over 29,700,000 tons. The year's figures will include shipments up to about December 10. Some small sales of Ore are occasionally reported, but the buying movement for next year has not started.

Pig Iron.—In the Foundry trade the demand has eased temporarily. This is not an indication of weakness but rather of the hopelessness of getting any Iron for prompt shipment. All the furnaces in this territory are reported completely sold up and out of the market. The supply is coming either from the East or the South for quick delivery. The demand for future delivery is light. For spot shipment Southern producers report sales in this territory on the basis of \$14.50, Birmingham, for No. 2. Some of the supply is coming from the East at prices which are considerably above the prices now being asked on contracts by the Valley furnaces. The market is holding steady at \$18 for No. 2 in the Valleys for delivery through the first half of next year, although that price can be bettered on contracts for second quarter delivery. Bessemer, Basic and Malleable grades are stronger as to prices. The furnaces in this territory are facing a good demand for Basic, with only a small available supply. A few odd lots are sold now and then at \$18 in the Valleys for quick shipment. There is a good deal of all of the Steel making Irons yet to be sold for the first half of the year and the furnaces are a little easier as to prices. On first half contracts the market is about \$17.25 to \$17.50, but for first quarter contracts the price is a little stiffer. The car shortage is still having an effect on Coke. However, Furnace Coke has run off a little during the week. It is now selling at \$3 to \$3.25 at the oven. Foundry Coke is still strong with a good demand at \$4 at the oven for prompt shipment. This price could be shaded on contracts running through the first half of the year.

Finished Iron and Steel.—The advance in the price of Sheets seemed to stimulate the market. There was a fear that it would have the contrary effect. It is apparent that some of the smaller mills, which have been disturbing factors, are now out of the market, evidently being filled with orders. The larger mills are getting an increasing tonnage at the new

figures. The market can hardly be called buoyant, however. The principal sales are made out of stock, on which prices hold on the basis of 2.05c. for No. 10 Blue Annealed, 2.65c. for No. 28 One Pass Cold Rolled and 3.65c. for No. 28 Galvanized. One of the influences on Sheets is the inability of some of the smaller mills to get Sheet Bars. The supply is extremely short and fancy prices are being paid. Finishing mills in this territory also report a shortage of Forging Billets. It is now necessary to peddle even a fair sized order among several producers to get a shipment. The mills are about in position to command any price that they think the market will stand. In some instances Forging Billets have sold at \$31 a ton in the mill yard, while ordinary Bessemer Billets have sold as high as \$29 at the mill. The car shops in this territory continue to report an immense demand, which is increasing the demand for Plates. This is augmented by a new demand from the shipbuilding interests. Two more boats were placed last week with the shipbuilders and it is understood that two or three more contracts are pending which will be closed shortly. The new demand for Steel from this quarter amounts to about 10,000 tons. The heavy losses of old boats on the lakes during the past season has caused an increased demand for new tonnage. In addition the shifting from old to new dock equipment at all of the lake ports is causing a demand for Structural Steel in that quarter. It is intimated that old boats are to be generally overhauled this year to make them adaptable to the new equipment and this makes an additional demand for ship Steel. This is part of the occasion for the heavier demand for Plates in this territory. The Plate supply is short. Some of the smaller Eastern mills which have been supplying local needs are now pretty well congested. Premium prices are not yet paid, however, even for prompt shipment. On Structural Steel the heavy demand continues. Specifications on orders are even ahead of contract requirements. Mills are expecting slightly easier conditions presently, due to the approach of bad weather for outdoor work. The climbing of the prices of Scrap and the increased demand from consumers are having an effect upon Bar Iron. More mills are reporting that they have sold virtually all of their output during the first half of the year. The price has stiffened but has not advanced, sales being reported at 1.80c. for spot shipment and 1.75c. on contracts. The small sizes of Steel Bars are plentiful still but the larger sizes are extremely scarce. The price holds at 1.50c., Pittsburgh, for both Bessemer and Open Hearth.

Old Material.—The market is still waiting. Dealers are trying to boost prices but the mills are holding off on buying. The consumption is heavy but the demand is comparatively light. Dealers are unable to trace the source of supply of the mills. The following represent the prices of dealers to the trade, gross tons: Old Steel Rails, \$16 to \$16.50; Old Iron Rails, \$22.50 to \$23; Iron Car Wheels, \$16 to \$16.50; Heavy Melting Steel, \$16.50 to \$17.50. Net tons: Cast Borings, \$9.50 to \$10; No. 1 Busheling, \$15 to \$15.50; No. 1 Railroad Wrought, \$16.50 to \$17.50; Iron Car Axles, \$22 to \$23; No. 1 Cast, \$14.50 to \$15; Stote Plate, \$11; Iron and Steel Turnings and Drillings, \$11.

The Bourne-Fuller Company, Cleveland, has just established a Tool Steel department, which has been placed in charge of J. C. Scott.

Birmingham.

BIRMINGHAM, ALA., November 27, 1905.

Pig Iron.—The Iron market has been less active this week than during any of the several preceding ones, but still there was a fair volume of business, made up principally of small orders. The price remains firm at \$14.50 for No. 2 Foundry for delivery first half of next year, with a few sales reported at \$15 for spot Iron. After the heavy buying for the past few weeks it was expected there would be a temporary lull about this time, a condition which seems to please the producers immensely, as feeling confident of higher prices they would prefer to stop booking orders for a time. Several of the large producers who have been out of the market for some weeks are still declining to quote.

Probably no more furnaces will go in blast until after the first of the year, as on account of the labor proposition during the holidays it is deemed inexpedient to start up at this time. The Tennessee Company has two stacks now ready to be blown in, but is waiting until after January 1 for this reason. Good progress is also being made on its No. 5 Furnace at Ensley and it is expected to be in operation within a few months. This will be a duplicate of its No. 6 Furnace, which is the largest furnace in the South, with a daily capacity of more than 450 tons. The report in the East that the Tennessee Company is contemplating the erection of two more stacks at once lacks confirmation here. The officers are rather reticent, but do not deny that such a thing has been under discussion, and intimate that while these furnaces may not be built in the immediate future it will only be a matter of time until its output will be largely increased. The company states that as its furnaces

now require relining they will be entirely rebuilt, enlarged and modernized, thus enabling it to produce much cheaper Iron. The fact that the Steel plant is increasing its demand on the furnaces for Basic Iron and the intention of the company to push the sale of its Foundry Iron through its own sales agents in future would seem to indicate the necessity of new developments at an early date.

The Alabama Consolidated, which is rebuilding its No. 2 Furnace at Gadsden, reports that it expects the furnace to be ready for operation about February 1. The capacity of this stack will be about 200 tons daily.

It is understood that the Williamson Iron Company, one of the pioneers in the Iron business in this district, will discontinue business. The ground occupied by its plant, which is now almost in the center of the city, has been sold to the Illinois Central Railroad for terminal purposes. Its furnace, which is a very small one and consequently expensive to operate, has not been in blast for several years, but its foundry department has been doing a good business.

Cast Iron Pipe.—The shops are now all working on old contracts, most of them being well booked ahead. The high price of Pig Iron is retarding sales to some extent, the price of Pipe not having advanced in the same proportion as yet. The manufacturers do not seem inclined to look for business at present prices and on account of the lateness of the season consumers are sending in orders only for immediate requirements.

Old Material.—The demand is good, at prices well in keeping with the price of Pig Iron. Stocks are low, however, and few sales of importance are reported.

Cincinnati.

FIFTH AND MAIN STS., November 29, 1905.—(By Telegraph.)

Pig Iron.—While the market remains strong and ruling quotations are apparently firm, there is an absence of that buoyancy that characterized it several weeks since. The inquiry is lighter, especially in the Foundry line, and scarcely any sales have been made calling for large tonnage. There is said, however, to be a heavy demand for Basic, Bessemer and Malleable Irons. Charcoal Irons are strong and in good demand, but the supply is quite limited as the furnaces are said to be well sold up on these brands. Ferromanganese is also a very uncertain quantity and difficult to obtain, with prices absolutely unquotable. It is quite possible that consumers in the Foundry line have melted a larger tonnage than they anticipated when contracting for their supply and numerous small orders are coming forward as a result. Production is believed to be at its maximum, at least until several new furnaces now in contemplation shall have been blown in. While we are advised that trade is less active than it was a few weeks since, we are also told that melters are calling for what Iron has been contracted for and no requests are being received to delay shipments. Southern No. 2 is well established on a \$14, Birmingham basis and is freely offered at this figure. Northern No. 2 is apparently firm on a \$17.50 basis, the same as last week. The lull in market conditions causes no apprehension and is probably of small significance, as it is a well established fact that the buying movement which began some months since could not last for an indefinite period without a breathing spell. We learn of an inquiry for 12,000 tons from a Pipe manufacturer in Northern Ohio, delivery to be made during February, March and April. We are also told that one of the leading Pipe industries bought about 5000 tons of low grade and Virginia Irons. The Roane Iron Company intends to put in a second furnace at Rockwood, Tenn., some time during the first part of the year. Freight rates from Hanging Rock district to Cincinnati are \$1.15 and from Birmingham \$2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$17.25
Southern Coke, No. 2.....	16.75
Southern Coke, No. 3.....	16.25
Southern Coke, No. 4.....	15.75
Southern Coke, No. 1 Soft.....	17.25
Southern Coke, No. 2 Soft.....	16.75
Southern Coke, Gray Forge.....	15.50
Southern Coke, Mottled.....	15.25
Ohio Silvery, No. 1 (8% Silicon).....	20.15
Lake Superior Coke, No. 1.....	19.15
Lake Superior Coke, No. 2.....	18.65
Lake Superior Coke, No. 3.....	18.15

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	\$20.25 to \$20.50
Lake Superior Car Wheel and Malleable.....	19.50 to 19.75

Coke.—The car situation is possibly a trifle easier, and shipments are coming forward with less delay. We are not to infer from this, however, that conditions are satisfactory, but that for the time being they show some improvement. We quote the best grades of 72-hour Foundry Coke as follows: Connellsville, \$4; Stonega, \$4; Wise County, Va., \$3.50 to \$3.75, f.o.b. ovens, with Furnace grades selling from \$3 to \$3.25.

Finished Iron and Steel.—Trade continues active and prices are firm. New Structural specifications continue to come forward, the mildness of the weather up to the present time being partially responsible for it. We quote, f.o.b.

Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; the same in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—Dealers are waiting for colder weather, when they expect large developments in their line. The demand continues active, but is less evident than is usual at this season of the year. Quite a considerable tonnage has been sold during the week, and prospects are good for a healthy winter trade. We quote dealers' prices, f.o.b. Cincinnati: No. 1 Railroad Wrought Scrap, \$17 to \$17.50 per net ton; No. 1 Cast Scrap, \$14 to \$14.50 per net ton; Iron Rails, \$20 to \$21 per gross ton; Steel Rails, rolling mill lengths, \$15 to \$15.50 per gross ton; Relaying Rails, 56-lb. and upward, \$24.50 to \$25 per gross ton; Iron Axles, \$22.50 to \$23 per net ton; Car Wheels, \$16.50 to \$17 per gross ton. Heavy Melting Scrap, \$15 to \$15.50 per gross ton; Low Phosphorus Scrap, \$18.50 to \$19 per gross ton.

German Iron Market.

BERLIN, November 10, 1905.

The reports from all parts of the German Iron industry have undergone a decided improvement within the past two months. The rate of production is increasing through the blowing in of new furnaces and the monthly make is now nearing 1,000,000 metric tons. As things now look that figure will be reached before the end of the year, and if the extremely favorable outlook for the trade is realized it is safe to predict that the production for 1906 will exceed 12,000,000 tons.

The prosperity equally affects nearly all lines of goods, from Ores to finished products, and the home and the foreign markets seem to vie with each other in swelling the demand for iron and steel products. The result has been a pretty rapid advance of prices during the past month or six weeks. The impelling cause for the advance, as German Iron men have admitted in various stockholders' meetings within the past week or two, has been the strength of prices in America and England. For a long time after the upward movement in those countries had set in German makers went on with their old schedules. The increasing demand in the world's markets, however, particularly the prodigious consumption at higher prices in the United States, convinced the German producers that the time had arrived for enforcing higher prices both for home and foreign sales.

Prices Advancing.

Various advances have accordingly been reported for about six weeks, and the tendency is still toward higher figures. On the Düsseldorf Iron Exchange Pig Iron prices were latterly quoted as follows, in comparison with October 19: Thomas Iron, delivered, 64 to 64.50 marks, against 62.20 to 62.90; English No. 3, f.o.b. Ruhrort, 72, against 71; Luxemburg Foundry No. 3, f.o.b. Luxemburg, 60, against 58; German Hematite, 72 to 73, against 72; Soft Steel Bars, 115 to 117.50, against 115; Bar Iron, 132.50, against 132 marks.

There have been general advances in commercial Steel products particularly for the export trade, and the works now claim that export prices are fully equal to those for the home trade. A late report asserts that German export prices are now on a level with those of English establishments, and in some instances higher. One of the most gratifying features of the situation is the heavy demand of the home trade, all departments of which are calling for increasing quantities. The machinery, locomotive, machine tool, electrical and shipbuilding establishments are all increasing their takings. Under these circumstances it has not been difficult for the Steel Syndicate to enforce higher prices. Nevertheless, its policy is rather conservative in the matter of prices. Just now it has to put on brakes to keep consumers from engaging themselves too far into next year. The latter are strongly disposed to place orders for long terms, fearing that still higher prices will have to be paid later; but in almost all branches of the trade producers have been refusing to take orders beyond the first quarter of 1906. So far as the syndicate is concerned, it is taking strenuous measures to prevent speculative buying. In cases where a consumer calls for a larger quantity than usual the syndicate demands proof that he has orders on his books requiring the production of extra amounts of goods, even making him give the name and address of his customer. This policy has caused some bad blood in the trade and in the daily press, some sections of which criticize the measure as merely designed to enable the syndicate to keep a free hand for future price advances. At any rate this action is in striking contrast with that of the old Pig Iron syndicate a half-dozen years ago, when the great boom of that period was approach-

ing its culmination. Consumers were at that time systematically frightened into placing contracts for Pig Iron for more than a year at the high prices then ruling, the syndicate representing that it would be impossible to supply the wants of consumers who delayed ordering.

Pig Iron.

In respect to Pig Iron the situation has been materially improved for the syndicate through an arrangement with a great independent furnace company at Stettin, the Krafft Werke, which had long been giving it much trouble in the eastern part of the country by cutting prices. Peace, however, was made about a month ago between Krafft and the syndicate and this prepared the way for higher prices, and at the beginning of this month the price of Hematite was marked up to 80 marks per ton and Foundry No. 1 to 79 marks, on shipments to points lying east of the Rhenish-Westphalian district.

The demand for Pig Iron is remarkably active. Many of the great mixed establishments which ordinarily sell to the syndicate their surplus Pig Iron not needed in their own mills are now actually buying from the syndicate. The latter had been operating with a restriction of from 20 to 30 per cent. on allotments but the restriction has now for some time been inoperative, the furnaces being allowed to turn out all they can produce. It is significant of the active work at the furnaces, too, that the Coal Syndicate has just ordered a larger production of Coke. About the middle of September the restriction of the Coke outturn was reduced to 20 per cent. on allotments, but recently it was further reduced to 8 per cent., and it is believed that next month will see a still larger volume of production.

The American demand for German Iron has been much more satisfactory for about two months. Up to that time there was much talk about American inquiries for Iron, mainly Spiegeleisen but there was a marked disinclination to buy at the prices asked. Hence it is not surprising that Germany's Iron exports to the United States for the nine months ended with September increased to only 45,518 metric tons, as against 36,035 for the corresponding months of 1904. After the market position in the United States, however, became so strong American buyers here began to place orders more freely. Orders of considerable dimensions for American account have been taken by furnaces in the Siegen district. Recently it was reported that rather heavy buying was going on in the Luxemburg-Lorraine district for shipment to California.

Germany's exports of Iron to the end of September—the October figures are not yet accessible—amounted to 2,342,431 metric tons, as against 2,082,610 tons for the like period of 1904 and 2,671,071 tons in 1903. The increase over 1904 was greatest in the latest months. The heaviest increase was in the shipments to England, which took 498,320 tons, as compared with 392,949 tons for nine months last year. China and Japan showed a heavy percentage increase, but the amounts were not large.

Car Shortage.

The Iron trade is more or less hampered, and has been for above a month, by conditions in the Coal trade, which finds itself unable to deliver the amounts of Coal ordered because the State railroads cannot supply the cars to move it. Throughout October the Essen district called for a daily average of about 21,000 cars of 10 tons each, but the railroad authorities were able to supply only about 18,000 a day, and for the entire Kingdom of Prussia the shortage on some days reached 6000 cars. As the result of this state of affairs the mines were often forced to throw off shifts of workmen, and even the mine operatives held meetings to protest to the Minister of Railroads. The latter could do little to help the situation, as many cars had to be detailed for moving the beet root crop, which might otherwise be ruined. The Government, however, is planning for large increases in the rolling stock of the roads. It is semiofficially announced that the new Prussian budget will provide for 1000 new locomotives and 30,000 freight cars. Of these locomotives nearly 500 will be ordered soon and a large number of passenger cars are also to be built. All this is materially improving the prospects of car shops and locomotive works.

Action of the Steel Syndicate.

Since the above was written the report on a sitting of the Steel Syndicate at Düsseldorf yesterday has become accessible. An advance of 5 marks the ton on half-rolled products was voted, to take effect at once. Such an advance was made several weeks ago, being then made to apply only to extra orders above the normal consumption of the buyer; but now it applies to all sales alike. The official report says that the sales of half-rolled material in October reached 176,167 tons, which is the highest figure yet registered. Sales for delivery in the second quarter of 1906 were ordered opened. The movement in Structural Shapes, especially for export, is extremely heavy. The works are receiving a large run of specifications and for some time considerable amounts of such material have been exported to the United States. The export price has undergone a further advance. The employment of the works on railroad material already or-

dered is very good and the demand for the next few months can only be met with difficulty. The October shipments of this specialty reached 149,973 tons, which is 28,323 tons above the movement in October, 1904. The general outlook for Steel Rails was characterized as very good, the export movement having shown an extraordinary increase since last spring, and Rail prices abroad show a gradual but steady advance. An increase of 5 per cent. in the allotments of Sheets, Tubes, Railroad Axles and Wheels was voted, but a proposed increase in Bar Iron and Wire Rods was not carried through.

New York.

NEW YORK, November 29, 1905.

Pig Iron.—The principal event during the week was the purchase by the United States Steel Corporation of 25,000 tons of Basic Pig from two Eastern producers for delivery to the Pencoed Works. This takes the place of metal which was to be shipped from the Corporation furnaces in western Pennsylvania, and thus makes this Iron available for the Steel works in the Pittsburgh district. The market for Foundry Irons is quiet. We quote Northern Iron No. 1 Foundry, \$18.75 to \$19; No. 2 Foundry, \$18.25 to \$18.50, and No. 2 Plain, \$17.75 to \$18, tidewater. Southern Iron is selling on the basis of \$17.75 to \$18.25 for No. 2 Foundry.

Steel Rails.—A steady stream of orders comes from a variety of sources, transcontinental lines and unimportant local roads joining in the buying movement. In the past week the Gould interests have ordered 25,000 tons more, which will be divided among the Wabash, Texas & Pacific and the St. Louis Southwestern lines. The Lehigh Valley has taken 18,000 tons and the Minneapolis, St. Paul & Sault Ste. Marie has bought 6000 tons additional, making its total 19,000 tons. The Duluth, Virginia & Rainy Lake has taken 8000 tons, the St. Louis, Troy & Eastern 5000 tons and the Milwaukee Electric Light & Power Company 4000 tons for its traction line. The fact that roads that placed good orders some months ago for 1906 are now coming into the market with additional requirements is significant of the great activity prevailing both in new construction and in replacements. The decision of the directors of the Chicago, Milwaukee & St. Paul road this week to build an extension to the Pacific means 1200 to 1500 miles of new line, the largest piece of new construction in this country in a number of years. This work will require upward of 175,000 tons of Rails.

Structural Material.—The imminence of a general strike in the building trades in New York is now seriously discussed, in view of the turn of affairs in the Post & McCord strike in the past week. This firm, backed by the Building Trades Employers' Association, has started nonunion men at work on three buildings in New York City and the officers of the House Smiths' Union threaten the stopping of work on all buildings now under construction. The month of November has been one of the best of the year for the American Bridge Company, in the neighborhood of 75,000 tons of bridge work having been booked. A great deal more is pending and is considered likely to be closed this year. The labor troubles have not yet affected operations in the American Bridge Company's works. The City & County Contract Company, which is building the New York, Westchester & Boston Railway, will receive bids on December 9, at 30 Broad street, New York, for 16 Steel bridges, which will require about 4000 tons of Steel. We quote the following minimum prices for tidewater delivery on shipments from mills: Beams, Channels, Angles and Zees, 1.84½¢; Tees, 1.89½¢; Bulb Angles and Deck Beams, 1.99½¢. Beams, 18 to 24 inches, 0.10¢ extra; Angles over 6 inches, 0.10¢ extra. Sales of Structural Steel out of stock have been made at from 2.50¢ to 3¢. German Structural Shapes, in which some further business is pending, are still quoted £5 10s., c.i.f. New York.

Plates.—Local business is light, but this condition of trade is expected partly in view of the approach of inventory season and partly because buyers covered their requirements rather freely during the earlier part of the month when an advance in prices was anticipated. No premiums are being exacted in this market as far as can be ascertained. Quotations at tidewater for shipment from mills are as follows: Sheared Tank Plates, 1.74½¢ to 1.84½¢; Flange Plates, 1.84½¢ to 1.94½¢; Marine Plates, 1.94½¢ to 2.04½¢; Fire Box Plates, 2.04½¢ to 2.60¢, according to specifications.

Bars.—The most important occurrence in this branch of trade during the week was the advance of \$2 per ton on Hoops, which are now quoted at 1.85¢, Pittsburgh, or 1.99½¢, tidewater, in carload lots with full extras. The general Bar trade is moderately active and prices are firmly held at the recently prevailing premium over the official rate. Quotations are continued at 1.84½¢ to 1.89½¢, tidewater, for Bar Iron, and 1.64½¢ to 1.84½¢, tidewater, for Steel Bars. For very prompt delivery higher prices are being secured than the maximum figures given.

Cast Iron Pipe.—Bids were opened on the New York City letting for 30,000 tons last Wednesday, but the contract

has not yet been awarded. It is intimated that the city authorities consider the prices named too high, and that other bids may be called for. Bids will be opened on about 1300 tons of small sizes by this city to-day. The city will further receive bids December 13 on the reletting of the 7800 tons of 48-inch pipe on which bids were rejected a short time since. At the same time bids will be received on about 1500 tons of small sizes. Foundrymen report an unusually heavy inquiry for spring delivery. It is stated that never before have so many inquiries for spring been received at this time of the year. The very favorable weather which has recently prevailed has greatly relieved the tension for delivery of Pipe this fall. Foundrymen were beginning to become apprehensive lest they would not be able to fill some of the contracts which they had taken for this season. The condition of the industry is such that the foundries will go through the winter in excellent shape. Prices continue to stiffen and carload lots are now quoted at \$28.75 per net ton for 6-inch at tidewater.

Old Material.—The Steel Scrap situation attracts greater interest than any other branch of the Old Material trade. Consumers are diligently making inquiries, indicating that by no means all of them are sufficiently supplied with stock to feel comfortable. Two inquiries of 10,000 tons each are in the market among others. Prices are about the same as those quoted last week, but it is asserted that no purchases can be made here at the figures given, as holders are asking at least 50c. per ton more. A sale of 2000 tons of Heavy Cast Scrap is reported at 25c. per ton higher than the ruling prices last week. The strength of Cast Scrap is, of course, due to the continued advances in Pig Iron. Hammered Iron Axles are very strong now, being worth \$28, delivered at works in eastern Pennsylvania. A sale of 1000 tons was made at this price. Cast Borings have improved in demand and transactions are reported at about 25c. per ton better than was realized on sales last week. It is to be expected that in some lines the demand may be comparatively quiet the coming month, as the inventory period is approaching at which time consumers usually desire to carry as little stock as possible. Nevertheless heavy shipments of all kinds of Old Material have been made within the past 30 days, and stocks in dealers' hands in this vicinity have been very greatly reduced. Quotations are approximately as follows for New York and vicinity, per gross ton:

Old Iron Rails.....	\$22.50 to \$23.00
Re-rolling Rails.....	25.00 to 26.00
Old Steel Rails, re-rolling lengths.....	16.50 to 17.50
Old Steel Rails, short pieces.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	16.50 to 17.00
Standard Hammered Iron Car Axles.....	26.00 to 27.00
Old Steel Car Axles.....	21.00 to 22.00
No. 1 Railroad Wrought.....	21.50 to 22.00
Iron Track Scrap.....	18.50 to 19.25
No. 1 Yard Wrought, long.....	19.50 to 20.50
No. 1 Yard Wrought, short.....	17.50 to 18.50
Wrought Pipe.....	15.25 to 15.50
Light Iron.....	11.50 to 12.00
Cast Borings.....	9.25 to 9.50
Wrought Turnings.....	13.00 to 13.50
Old Car Wheels.....	18.00 to 18.50
No. 1 Machinery Cast.....	15.00 to 15.25
Stove Plate.....	12.00 to 13.00
Malleable Cast.....	15.50 to 16.50

Metal Market.

NEW YORK, November 29, 1905.

Pig Tin.—Business has been dull, consumers being apparently unwilling to make any commitment on the advancing market. Prices were at the lowest point a week ago when the metal was sold at 33.55c. and have steadily advanced since. The price for delivery in 5-ton lots to-day is 34.25c. This advance has closely followed a like advance in London from last week's low price of £154 to to-day's price of £156 2s. 6d. for spot. Futures have likewise advanced and are ruling to-day at £155 12s. 6d. In spite of the tremendous activity in business many holders of the metal are of the opinion that the price at the present time is too high and a sharp reaction would bring in good sized buying orders. The importations during the week have been small, amounting to but 436 tons. The total arrivals so far this month aggregate 2936 tons and there are 1750 tons afloat. A total importation for the month of November of less than 3000 tons is indicated.

Copper.—Prices have advanced sharply, due to moderate buying. There is no record of any large sales, but the purchases have been made of carload and 50-ton lots by manufacturers who have not fully covered their requirements for November and December. The price question is hard to determine, depending upon the urgency of the needs of the buyer and the metal the holders have to sell. For Lake and Electrolytic 18c. would probably be the average, with sales for future months made on a basis of ¼c. to ½c. lower. For strictly spot stocks a premium would probably be demanded above these prices. There seems to be very little metal in the market, the producers

stating that they have no large stocks of metal to sell for any nearby deliveries. In London the market has been fully as excited, sales averaging over 1500 tons a day. On the 23d instant the London quotation was £75 10s., quickly advancing to £78 12s. 6d. on the 28th, and to-day's closing quotation for spot in that market is £77 15s. Future quotations have likewise followed the advance and are now held at £77 5s. To-day's London market is nearly £1 lower than yesterday's. It is interesting to note in this connection that while the difference between spot and futures was £2 a week ago, to-day it is but 10s. Best Selected is also decidedly higher at £83 10s. The exports so far this month are very light, aggregating but 11,959 tons.

Spelter.—The market is decidedly firmer, 6.25c. being quoted for spot in the St. Louis market, and 6.35c. to 6.45c. in the New York market. In London prices are also slightly higher at £28 12s. 6d.

Pig Lead.—The scarcity in spot stocks continues, sales having been made on the basis of 5.55c. St. Louis, or 5.75c., New York. In a jobbing way prices ranging from 5.87½c. to 6.12½c. are frequently obtained. The American Smelting & Refining Company continues to quote shipment Lead at 5.25c. for 50-ton lots, but orders are only taken on the basis of price current on date of shipment. In London the market is also higher, reaching the highest quotation for the year at £16.

Aluminum.—The scarcity of Copper and difficulty in obtaining supplies promptly have led to a decidedly better demand for Aluminum both in Ingots and Sheets. There is some difficulty in obtaining supplies in this metal promptly which has resulted from the increased demand. The quotation is unchanged, and for No. 1 Aluminum Ingots for remelting 33c. is quoted for ton lots.

Antimony.—The market is firm and slightly higher, Cookson's being quoted at 12.50c. to 13c., Hallett's at 12.25c. to 12.50c., and other brands at 11.50c. to 12c.

Nickel.—Large lots are sold at 40c. to 45c.; smaller quantities at 50c. to 55c.

Quicksilver.—Flasks of 75 lbs. in 100-flask lots continue to be held on a basis of \$40 per flask. In San Francisco domestic orders are unchanged at \$39. Rothschild's price in London is £7 5s.

Tin Plate.—Business at the mills continues to improve, several additional mills having been started during the week. Specifications on contracts are coming in rather more freely. The price is unchanged on a basis of \$3.59, f.o.b. New York, and \$3.40, f.o.b. Pittsburgh. In Swansea Welsh Plates are unchanged at 12s. 9d.

Old Metals.—The buoyant action of the Copper market during the week has been largely reflected in the demand for Scrap from sellers' hands. The high prices have cleaned up a number of small lots, which were eagerly sought after by buyers. The scarcity of metal is most noticeable in Heavy Copper and Heavy Machinery Composition, both of which have advanced rapidly. In the matter of price there is considerable difference of opinion, depending on the ability of sellers to deliver the goods and the quantities. For round lots sellers are holding to the following basis:

	Cents.
Copper, Heavy Cut and Crucible.....	17.00 to 17.50
Heavy and Wire.....	16.75 to 17.25
Light and Bottoms.....	15.00 to 15.50
Brass, Heavy.....	11.25 to 11.75
Light.....	9.00 to 9.50
Clean Turnings.....	10.00 to 10.25
Heavy Machinery Composition.....	15.00 to 15.50
Composition Turnings.....	13.00 to 13.50
Heavy Lead.....	5.15 to 5.35
Tea Lead.....	5.00 to 5.25
Scrap Aluminum.....	20.00 to 25.00

At Kingston, N. Y., November 28, the New York State Water Supply Commission heard protests against the plan to secure an additional water supply for New York City from the Catskills. It was argued that while the proposed plan provided for only a 20 years' supply at a cost of \$160,000,000 it would be possible for \$210,000,000 to secure a supply from the Adirondacks to last a century.

At the meeting of the Merchant Marine Commission appointed for November 28 at Washington, only four of the fourteen members were present, including Senator Gallinger, the chairman. Only an informal discussion took place of plans for getting the commission's bill passed at the coming session of Congress. The bill died on the calendar of the House at the last session. It called for an expenditure of \$3,000,000 the first year of the subsidy programme.

Iron and Industrial Stocks.

NEW YORK, November 29, 1905.

Industrial stocks have been very prominent in transactions on the Stock Exchange during the past week. Conspicuous among these stocks for sharp advances have been Tennessee Coal, which rose from 100% on Thursday to 129 on Tuesday; Sloss-Sheffield common, which moved up from 82% on Thursday to 95% on Tuesday; Republic common, which jumped from 27 on Saturday to 33% on Tuesday, and Republic preferred, which reached its record high on Tuesday at 104. Reports are persistent that a consolidation of interests of these three companies is pending. Other stocks in the iron and steel line have been very strong. On Tuesday Pipe common touched 43%, Pressed Steel common reached 52%, Railway Spring common sold up to 60%, Colorado Fuel rose to 49%, Locomotive common reached 72%, Car & Foundry common touched 41%. The United States Steel stocks were strong, but the advances were not so great as in other stocks. The highest price reached by the common stock was on Saturday, when 38% was touched, while the preferred reached its highest point on Monday at 105%. Last transactions in active stocks up to 1.30 to-day are reported at the following prices: Can common 9, preferred 70; Car & Foundry common 41%, preferred 101; Locomotive common 71%, preferred 118%; Steel Foundries common 12%, preferred 46; Colorado Fuel 47%; Pressed Steel common 52%, preferred 99%; Railway Spring common 59%; Republic common 32%, preferred 103; Sloss-Sheffield common 91; Tennessee Coal 124; Cast Iron Pipe common 42%, preferred 93%; United States Steel common 37%, preferred 104%.

Harvey Fisk & Sons, New York, have underwritten \$8,000,000 of 5 per cent. first-mortgage extension bonds of the Bethlehem Steel Company at a price said to have been 92% and it is understood that the firm has an option on the underwriting of \$4,000,000 more of the same bonds. The bonds are secured by a first mortgage on the large additional acreage at Bethlehem, Pa., recently acquired by the company, and on the extension of plant which the company has long had in contemplation, plans for part of which have been completed. The bond issue was authorized at a board meeting held Monday. The land acquired at Bethlehem comprises nearly 75 acres. The most immediate improvement will be the erection of five new furnaces for the production of pig iron, having a total of 2500 tons daily capacity.

Dividends.—Republic Iron & Steel Company has declared a quarterly dividend of 1% per cent. on the preferred stock and an additional payment of 1% per cent. on the deferred dividend account. The dividends are both payable January 2.

General Electric Company has declared the regular quarterly dividend of 2 per cent., payable January 15.

New York Pig Iron Warrant Market.

The sales in the New York Pig Iron Warrant Market in the Produce Exchange during the week ending at noon Wednesday were especially light, amounting to but 1300 tons. The transactions were as follows: 200 tons January regular, \$17.25; 300 tons of January regular \$17.25; 100 tons of November foundry, \$17.30; 100 tons of February foundry, \$17.50; 100 tons December foundry, \$17.40; 500 tons April regular, \$17.50. There were no sales of warrants, the transactions all being for certificates. The prices established on call Wednesday noon were in some cases higher than last week. They were as follows:

	Regular.		Foundry.	
	Bid.	Asked.	Bid.	Asked.
Cash	\$17.00	\$17.50		
November	17.00	17.50	\$17.00	\$17.50
December	17.30	17.50	17.00	17.50
January	17.30	17.45	17.30	17.50
February	17.30	17.80	17.30	....
March	17.40	18.00	17.30	....
April	17.40	18.00	....	....
May	17.30	18.00	....	....
June	17.40	18.00	....	....

The committee appointed by the National Civic Federation two months ago to investigate the comparative results of private and municipal ownership of gas, electric and water plants and street railways met in New York City November 27. M. E. Ingalls, Cincinnati, presided, and 19 out of 21 committeemen were present. August Belmont addressed the committee, saying he favored the inquiry even though the outcome might mean that the municipality would take away under condemnation properties which he managed. The committee decided to visit a number of both private and municipal plants in this country, beginning in January. A sub-committee will

then be sent to Europe to mark out an itinerary and the entire committee will meet in London June 1, 1906, preparatory to a European tour of inquiry.

Duty on Metal Patterns.

General Appraiser Walte, for the Board of United States General Appraisers, has handed down a decision sustaining the protest of G. W. Sheldon & Co. against the assessment of duty at the rate of 45 per cent. ad valorem on certain metal patterns for machinery. The duty was imposed under paragraph 193 of the Tariff act. The importers claimed that the articles were free under paragraph 616 of the act, which reads as follows:

Models of inventions and of other improvements in the arts, including patterns for machinery, but no article will be deemed a model or pattern which can be fitted for use otherwise.

The decision is in part as follows: "The merchandise is described in the heading of the invoice as 'samples or patterns of portions of steam turbines.' They consist of various articles of steel or other metal illustrating the construction and assemblage of the blades of a steam turbine engine. They are in no sense molders' patterns, but are used after the manner of models.

"The evidence also shows in our judgment that they cannot be practically fitted for other use than as such models or patterns, and as a matter of fact were imported for the express purpose of using them as models in the construction of turbines. Some of the imported parts would have to be taken apart before they could be used, which could not be done without injury.

"The articles are apparently 'model turbines,' such as were described in the board's decision in re R. Hoe & Co., G. A. 5889. We are of the opinion that the goods in controversy are entitled to free entry under said paragraph 616, and sustain the protest, reversing the collector's decision."

It is understood that the patterns were imported for the use of the Allis-Chalmers Company.

Publication was recently made in London concerning the "quick relining of a blast furnace in America," the furnace having blown out on August 16 and blown in again on October 1. The statement called out a communication citing a record of three weeks and one day for the relining of No. 1 furnace of the Lilleshall Company of Shropshire, England, in 1857. This furnace was 16 x 50 feet and was charged from the level.

The directors of the Chicago, Milwaukee & St. Paul Railroad at a special meeting in New York November 28 authorized the construction of an extension from Evarts, S. D., the most westerly point now reached by the system, to Tacoma and Seattle. This will mean 1200 to 1500 miles of new road, the largest piece of new railroad building in the United States in a good many years.

It is noteworthy that the two blast furnaces to be added at the Carrie group of the Carnegie Steel Company and the two new stacks planned for the Duquesne group of the same company will be equipped with the Gayley dry blast plant. These will be the first installations of the Gayley apparatus apart from the original one at the Isabella furnaces.

Owing to the advance in the price of silver many of the old mines on the Comstock lode, Virginia City, Nev., are being prepared for the resumption of operations that were suspended several years ago. A large force of men will be put to work.

In the past week the gift of \$250,000 to Sheffield Scientific School, New Haven, Conn., by M. D. Vlet of Granby, Conn., has been announced. This is the largest gift to this school, except the original Sheffield endowment and the two \$1,000,000 dormitories given by Frederick W. Vanderbilt.

The Machinery Trade.

New York, November 29, 1905.

It does not appear as though the approaching holiday season will have any ill effect on the machinery trade and the dealers predict a strong demand for weeks to come. During the last week Milliken Brothers practically closed some extensive contracts for the projected steel plant to be erected on New York Harbor, and there were many substantial orders in the trade from various sources. The extensive demand for machine tools of all sorts and the inability of dealers to make early delivery have given quite an impetus to the second-hand machinery trade.

National Machine Tool Builders' Special Meeting.

The call for the special meeting of the National Machine Tool Builders' Association has been sent out by President E. M. Woodward, making the place the Hoffman House, New York, and the date Monday and Tuesday, December 4 and 5. The meeting will be called to order at 10 o'clock Monday morning and it is planned that the several sections will go into committee meetings as soon as possible after that hour, in order that preliminary work may be disposed of at the earliest possible moment, leaving plenty of time for discussion of the several important matters to be considered in the meeting of the association as a whole.

Bowring & Co., export and import commission merchants, 17 State street, New York, have arranged with Cornes & Co., one of the oldest English houses in Japan, having establishments in both Yokohama and Kobe, to act as their Japanese representatives. The arrangement was made through E. R. Duer, the head of Bowring & Co.'s export and import commission department, who was sent to the Orient to make first hand investigations and establish business connections as he deemed advisable. The business of Cornes & Co. covers a widely diversified field. They have an office in London and are the Japanese correspondents of firms of the highest financial standing as well as being in touch with the highest officials of the Japanese Government. Cornes & Co. maintain fully equipped engineering and electrical departments which are under the supervision of competent engineers. Since making the arrangements referred to Bowring & Co. have succeeded in obtaining several agencies from prominent American manufacturers and now have specifications in hand and have received prices on machinery and appliances required for the remodeling of the imperial Japanese naval arsenals. Other negotiations are under way and it is hoped soon to arrange for a full line of Japanese agencies for American manufacturers of engineering and electrical apparatus and supplies. The firm has also an agency in Buenos Ayres, Argentine Republic, where it is constantly shipping a considerable amount of American made goods. In Australia the firm is represented by Robert Little & Co. of Sydney. Mr. Duer at latest advices was in China, and after covering that field he will visit the Philippines and possibly Australia.

Two Machine Tool Lists.

The Pennsylvania Railroad Company's inquiries through its purchasing agent continue to expand as growing business necessitates immediate purchases. The following list is made up of tools and machines for which there is an early need and which cannot wait until purchase is made upon the annual tool programme, which will not be issued until the early spring of next year:

Six 15-bench open Narragansett street cars, three complete with trucks and three without trucks; six sets quadruple motor equipments for above, double ends, with two controllers; one 16 inch by 6 foot screw cutting engine lathe, on oil pan, with change gear system, taper attachment and relieving attachment, complete with countershaft; one pipe threading machine, with countershaft and dies, to cut from $\frac{1}{4}$ to 2 inch pipe; one 175 horse-power boiler, ten tubes wide and nine tubes high, tubes to be 16 feet long, with two 36-inch drums, good for 160 pounds working pressure; one cross graining machine, without extra attachments; one wood working lathe, one four-spindle vertical boring machine, one small tenoning machine, one heavy self feeding rip saw, one end tenoning machine to tenon material 10 inches thick by 12 inches wide; one vertical cross compound engine, 130 horse-power; one horizontal cross compound steam engine, 130 horse-power; one horizontal cross compound steam engine, 280 horse-power; one vertical cross compound steam engine, 280 horse-power; one horizontal cross compound steam engine, 150 horse-power; one beam girder for bridge at Roxburg; superstructure overhead crossing at Berlin avenue, Egg Harbor; superstructure overhead crossing at Frankfort avenue, Egg Harbor; one grinding machine one iron pump, with 220-volt direct current motor of proper size to operate the pump on a maximum suction of 24 feet to the top of the pump when delivering 500 gallons of water per minute.

The Standard Roller Bearing Company, Philadelphia, Pa., which has the past year made large extensions to its

plant and has been a heavy purchaser of machinery, is now in the market for 3 radial drills, 14 lathes, 3 milling machines, 10 universal grinding machines, 8 upright drills, 1 planer, 2 shapers, 2 Porter & Johnson semi-automatic machines and 6 Cleveland automatic screw machines, to equip the property adjoining its plant, which it has just purchased from the Pennsylvania Iron Works Company. The property consists of a four-story brick building, 95 x 200 feet, and it is the intention of the company to equip this building with a full line of machinery immediately. In addition to the machine tools noted there will be a large number of other machines required, which the company is not yet ready to specify. The newly acquired property has a total floor space of about 40,000 square feet, which gives the company a total of 175,000 square feet of floor space in all. Large extensions to its foundry capacity are also being made. The company is building a crucible steel casting plant with a yearly capacity of 2000 tons on property recently purchased from the American Ice Company and a new iron and brass foundry, 60 x 125 feet, the latter in addition to its present iron and brass foundries.

Two Steel Companies Buying.

Milliken Bros., 11 Broadway, have awarded several contracts for equipment for their proposed new steel plant on New York harbor. While the contracts have not been signed, several fortunate ones who submitted figures on heavy rolling mill equipment, power equipment and the like have been informed that their bids were accepted, and it is probable that the details will be closed within a few days and the contracts signed. Alexander Hamilton is the chief engineer in charge of the details connected with the buying and he has been very busy during the past two weeks receiving propositions from machinery houses. It is probable that before many days announcement will be made that most of the heavy machinery for the plant has been contracted for.

A project which the trade has been following very closely for some time and for the carrying out of which large orders for machinery are now being placed is the new plant to be erected at Buffalo, N. Y., by the New York State Steel Company, which was organized last September by Spencer Kellogg and other well-known men. The company was organized primarily for the fabrication of steel, but we understand that it is now the intention to erect an open hearth steel plant, the contract for the greater part of the equipment of which was closed a week or so ago. The plant is to be erected upon a 25-acre site which has a frontage of 900 feet on the Buffalo River and is bounded on one side by the Delaware, Lackawanna & Western Railroad. Connection will be made with the South Buffalo Railroad, which will give the company a connection with every railroad entering Buffalo. The Garrett-Cromwell Engineering Company, Cleveland, Ohio, has the contract for the erection of the plant, and purchases of machinery are to be made through that company.

Important Machinery Requirements.

The United States Cast Iron Pipe & Foundry Company, 71 Broadway, New York, will erect at Burlington, N. J., in connection with its plant there, a foundry building for the manufacture of special castings, together with a machine shop and power house. The foundry will be a steel frame building 130 x 150 feet, with a central span of 62 feet and two shed spans each of 32 feet. Running the full length of the main span will be girders for 30-ton cranes and full length of one of the shed spans crane runway girders for 5-ton cranes. At the center of the building on one side will be placed the cupola and charging platform. The platform will be connected to an elevator house and on either side of the elevator house will be blower rooms. One end of the building is designed so as to be easily taken out in order to allow for extensions. Running along the two sides and in the permanent end of the building will be an 18-inch stone wall 8 feet in height. The roof of the main building and elevator and blower house will be covered with galvanized iron and corrugated iron on the sides and ends of the foundry. Plans for the proposed machine shop and power house have not been completed as yet and the details of the equipment will be arranged later on. It is anticipated that the improvements will cost more than \$100,000, and when they are completed the foundry will be one of the largest and best equipped in the country and its present output will be increased by almost one-third. It has been said for some time that the company has been running its Burlington plant to its utmost capacity, and the work of extension will be rushed through as rapidly as possible. It is expected that it will be completed by next spring, if not before. The purchasing committee of the company will have charge of the selection of the equipment, but it is not thought that that matter will be taken up for the next few weeks.

The Pennsylvania Swedish Iron Company, 307 Empire Building, Pittsburgh, Pa., expects to be in the market shortly after the first of the year for rolling mill equipment. The company, which is building a plant at Cheswick, Pa., for the manufacture of charcoal iron blooms and skelp, has

purchased the machinery it requires at present, including boiler, Compressor and hammers.

The Baltimore & Ohio Railroad is planning extensive improvements for Philadelphia, Pa., where it is understood the company will spend over \$500,000 early next year for new freight yards and the construction of shops, roundhouse and other buildings.

The entire Newark, N. J., plant of the Central Foundry Company is being overhauled and extended so that when alterations now under way are completed the plant will be twice its present size. A new machine shop, finishing room and clearing room 50 x 75 feet is being built at the rear of the company's warehouse, and on the north side of the new structure the old machine shop will be moved so as to more than double the space now used for that class of work. The shop will be one story in height and will have a saw tooth roof. A new boiler and engine room is also to be erected and new machinery will be installed throughout. A 250 horse-power compound condensing engine will be put in, in addition to a 250 horse-power electric generator, three 125 horse-power boilers, one 90 horse-power motor, two 50 horse-power motors and two 25 horse-power motors. The company will generate its own electricity for lighting and motors will be used to run machinery by the group system. There will be a large structure 112 x 269 feet added to a building of the same size which is part of the plant at present. The building will be of frame with a brick foundation and will be one story in height. When the alterations are complete the company will turn out from 130 to 140 tons of finished material a day, whereas its present daily output is in the neighborhood of 65 tons. The details connected with the equipping of the new shop are in the hands of Mr. Schumaker, who makes his headquarters at the office of the Central Foundry Company in the Morton Building on Nassau street, New York.

The American Can Company continues to plan for extensions and its latest move in that direction has been the purchase of about 43,000 square feet of property in Chicago to be used as the site for a new factory building. The property was bought for \$123,750 and it is understood that plans are now under way for the factory building. The American Can Company, whose main offices are at 11 Broadway, has been extending its plants in various parts of the country for some time past and its purchases in the New York machinery market have been large.

J. G. White & Co., 49 Exchange place, New York, which has been awarded the contract for a naval coaling station at Alongapo, Subig Bay, P. I., by the United States Government, is now purchasing machinery in the New York market for equipping the station. The plant will consist of apparatus for unloading coal from vessels or cars, storing it, reclaiming the coal from storage and delivering it to cars or vessels again. The work will consist of a wharf 75 x 250 feet, which will be built on clusters of piles inclosed in concrete. The deck will be of steel and concrete and from the outer edge of the wharf a steel and concrete coal bunker will be erected. It will be 250 feet long and will have a capacity of 1250 tons, and will be provided with chutes for delivering coal from and into vessels and cars. The bunker will be operated by an electrical unloading tower, constructed entirely of steel and designed for taking coal from either the landward or seaward sides and delivering it into the bunker or upon the conveyor, which will carry it to the coal storage building. The conveyors will be provided with continuously operating weighing machines and the conveyors will be of the belt type, manufactured by the Robins Conveying Belt Company, New York. They will have a capacity of from 100 to 150 tons of coal per hour. The coal storage shed will be a steel structure 150 x 450 feet. Several electric traveling locomotive cranes will deliver or distribute the coal from the piles in which the conveyor will dump it. All of the coal handling apparatus will be electrically operated and a power house will be installed adjacent to the coal storage building. This power house will also contain the pumps for supplying water to a water storage tank of about 50,000-gallons capacity. It will require about two and one-half years to complete the contract, and the price, including the material and construction, is \$500,000.

Although work on the Westchester County system of the New York, Westchester & Boston Railroad Company is being rushed as fast as possible, it is not expected that the details for the power house, machine shop and other structures will be arranged for several weeks to come. No plans have as yet been prepared except in a general way. William A. Pratt, chief engineer of the company, who has an office at 30 Broad street, has the matter in charge, but he has been busy of late attending to the construction details of the road. Plans will be prepared for a power station in which about 1500 kw. of power will be used, and there will be three converter stations as well as machine shop and repair shop. No announcement has been made as yet as to where the structures are to be located and the information has been held back, probably because it may affect property values. The company is constructing a four-track third-rail electric railroad in towns in Westchester County to con-

nect with the subway system in New York. The line will run from White Plains, through Scarsdale and Tuckahoe and Mount Vernon, where it will meet the main line which is to extend from Portchester, through Rye, Harrison, Mamaroneck, Larchmont, New Rochelle and Pelham. The interests of the company are closely identified with August Belmont traction projects, and in all probability a general terminal station will be erected to take care of the traffic of the New York & Westchester Company and the Belmont roads. It is the purpose of the company to complete its lines as well as the power house and other buildings within two years. William Barclay Parsons has been engaged as consulting engineer in the work, and a large corps of other engineers are connected with the plan. The City & County Contract Company, which has been awarded construction contracts by the New York & Westchester Company, is preparing to sublet contracts for 16 steel bridges to be built in the Bronx between West Farms and the northwest boundary of the city.

C. S. Powell, general agent of the Westinghouse Electric & Mfg. Company, who has for some time occupied offices at 11 Pine street, New York, has removed to the offices of the company on the nineteenth floor of the Trinity Building, 111 Broadway. The Westinghouse Electric & Mfg. Company, in addition to its offices in the Hanover Building at 11 Pine street, occupies the entire nineteenth floor of the Trinity Building.

Chicago Machinery Market.

CHICAGO, ILL., November 28, 1905.

The demand for machine tools is not quite as brisk as during the preceding two months and sales from store are not nearly so heavy. This temporary lull in demand will give the manufacturers an opportunity of catching up on deliveries and dealers on "Machinery Row" hope to have an opportunity of replenishing their badly depleted stocks. Announcement of advances on lathes and planers is expected almost daily, although it is possible that nothing will be done until the first week in December. The stocks of second-hand tools have been replenished during the past ten days by the dismantling of two plants. One plant is to be re-equipped entirely with new machinery, while the other company has gone out of existence.

The Illinois Steel Company has placed contracts during the week for the installation of two new merchant mills at Milwaukee and recently contracted for several large cranes to be installed at its new open hearth plant under erection at South Chicago. The Morgan Engineering Company, Alliance, Ohio, was awarded the bulk of this equipment, costing approximately \$100,000.

The American Steel Foundries is improving its Western plants and at St. Louis 13 electric cranes and trolleys are being installed.

The Scullin-Gallagher Iron & Steel Company, St. Louis, is also closing its equipment contracts for its new steel casting plant, which will contain five furnaces. This equipment includes cranes and all kinds of chipping and cleaning machinery.

Contracts are also being awarded for blowing engines to be installed at the new blast furnace plant of the Iroquois Iron Company and the Federal Furnace Company at South Chicago.

Swift & Co., Union Stock Yards, Chicago, are adding to their machine shop equipment and will buy one 72-inch lathe, one 72-inch universal drill, one screw machine and one 20-inch lever drill.

The J. R. Harrington Package Company, Belmont, N. Y., will build a new plant next spring at Crandon, Wis., having purchased a large site at the latter place. The company will buy shafting, a band saw, band resaw, cars for kilns, lathes, drum saws, leather belting, conveyors, steam pipes and other equipment.

The Zumbrota Clay Mfg. Company, a new company just incorporated with a capital stock of \$100,000 at Red Wing, Minn., to make hollow blocks for building purposes, will buy a full line of machinery for a plant which it will erect. A. J. Rockne, W. F. Bevers and S. B. Scott are interested.

W. C. Wilcox, Limited, Winnipeg, Manitoba, has incorporated, with a capital stock of \$200,000, to build all kinds of tools and machinery. He is in the market for a large lathe, a drill and a cylinder boring machine at the present time and will buy other machinery later.

W. A. Reid, St. Louis, Mo., is in the market for a 75 or 100 kw. direct connected generator, with or without engine; three 15 horse-power motors, one 10 horse-power motor, three 7½ horse-power motors and one 3 horse-power motor.

The Mason City & Clear Lake Traction Company, Mason City, Iowa, is preparing plans for its power equipment and contracts will shortly be let. T. J. Hanlon may be addressed.

The Board of Water Commissioners, Detroit, Mich., has placed contracts for three 333 1-3 horse-power Wickes boilers, equipped with Jones stokers.

The University of Wisconsin is to build a new heating and power plant to cost \$250,000. The regents of the uni-

versity have purchased a site for the plant south of University avenue, between Charter and Bruen streets.

The Marshall & Huschart Machinery Company, 62 South Canal street, Chicago, dealer in new and second-hand machinery, has opened an office at 1024 and 1025 Chemical Building, St. Louis. George J. Stansbury, formerly connected with the Chicago office of the company and well known in the machine tool trade, has been appointed manager. No tools will be carried at this branch, as the stock carried in Chicago is sufficiently large to meet all demands in this new field. Practically all of the Eastern machine tool builders represented by this company in the Chicago district will likewise be represented by them in the St. Louis territory, and it is probable that a number of Cincinnati agencies will also be procured in the near future.

The Pittsburgh Shafting Company, Detroit, Mich., having found it necessary to increase its space, will utilize a portion of the building at 39-41 Atwater street. The Palmer-Bee Company, dealer in power transmission equipment, will occupy the balance of the building. This property is at present tenanted by the Michigan Safety Furnace Pipe Company, which will shortly move, however, to the Penberthy Injector Company Building at Abbott street and Brooklyn avenue, which it has purchased.

The Compania Industrial Mexicana, Chihuahua, Mexico, has received contract for the building of all hoists for the Compania Minera de Naica, a large mining company, which is installing an electrical generating plant to furnish power for the operation of its mines. Each shaft will be equipped with an electric hoist of 35 horse-power.

New England Machinery Market.

WORCESTER, MASS., November 28, 1905.

Some of the machine tool builders are eking out their supply of labor by operating their shops into the evening, getting quite a material addition to the producing capacity of their plants. The demand for machine tools continues unabated, there appearing to be little difference in various types of machines as to the volume of orders. The heavier tools for which the demand was not so brisk as lighter tools, are now at the same premium. Orders are getting farther and farther behind in point of delivery. Delays in freight shipments are more annoying if anything. Foreign orders are numerous. The general condition remains unchanged. General manufacturing is just as prosperous. Establishments which require a smaller percentage of skilled labor are at a great advantage, and many are working with two shifts of men.

There will be a large attendance of New England members of the National Machine Tool Builders' Association at the special meeting at the Hoffman House, New York, December 4 and 5. The manufacturers recognize that the meeting will be one of great importance and few houses will be without a representative. A pretty general agreement exists as to some of the questions which will arise, but others will require careful consideration and the discussion should last well into Tuesday, possibly into the evening, though it is hoped that everything will be completed so that those members who desire may attend the opening session of the American Society of Mechanical Engineers.

The Chandler Planer Company, Ayer, Mass., manufacturer of metal planers, has purchased a lot of land in the rear of the new shop, now nearly completed, and plans have been prepared for an extension of the building, the new part to be equal in size to that which is practically ready for full occupancy. The building is 80 x 125 feet, one story, with galleries for the lighter tools. It will be necessary for the Board of Directors to vote on the matter of erecting the addition this winter, but the probabilities are that they will so decide, for the company has business in sight which will provide all that the enlarged shop can take care of. The company manufactures the new Chandler planer. The company has purchased the big planer, which has been in the shop of the L. W. Pond Machine & Foundry Company, Worcester, for a number of years. The machine is 88 inches wide, 72 inches high and has a 33-foot table. The weight is 50 tons.

The Hasbrouck Motor Works, Incorporated, West Mystic, Conn., is to move its shops to New London, where more commodious quarters have been secured at Winthrop Cove. The company states that it will probably put in some new machinery later, but will not be in the market for the equipment just at present. The work of perfecting and testing an oil motor has been in progress for the past six months and it is planned to build this motor in sizes up to 300 horse-power. This will be in addition to the present line of gasoline engines manufactured by the company. It is the intention to meet the smaller trade in the near future by introducing a line of two-cycle engines, the company's regular engine being of the four-cycle type.

The L. W. Pond Machine & Foundry Company, Worcester, Mass., which has abandoned the manufacture of metal planers, as previously stated, is to devote its machine shop

to the automobile business. The building will become a garage and repair shop, and the agency has been taken for several standard lines of motor cars. It is not improbable that the business will later on develop into the manufacture of automobiles, though there is no intention of going into this at present. The foundry will be continued in the larger quarters which will come with the completion of the large foundry addition. The company has been reorganized, following the retirement of Caleb Colvin, who has been associated in the management for a number of years. M. T. O'Leary, for some years the manager, has been elected president and treasurer, and T. P. MacDonough, secretary. Two new directors have been chosen—William F. McCarthy of Boston and George L. Wilson of New York. James W. Murphy, recently with the Prentiss Tool & Supply Company, will be associated in the sales end of the business.

It has been several times reported that the United Fruit Company, Boston and New York, is to establish a large repair station for its ships on the island of Jamaica. The company's engineers have given the matter some serious attention, but nothing is planned for the present. It would be a logical development of the company's facilities for caring for its ships when work is needed at the Jamaica end of its routes.

The Hoggson & Pettis Mfg. Company, New Haven, Conn., manufacturer of chucks, has sold its factory property on Court street to the New York, New Haven & Hartford Railroad, which will use the land for its improvements. The company states that it is not yet in position to say anything regarding the future location of its works.

The Torrington Mfg. Company, Torrington, Conn., manufacturer of machinery and metal goods, is to erect a new boiler house, 30 x 55 feet.

The Leominster Comb Company, Leominster, Mass., will add to its power equipment in connection with a large addition to its factory. The company is in the market for a 40 horse-power steam engine. The boiler, while not contracted for, is about decided upon.

A good deal of second-hand machinery has been put on the market by the sale of the plant and equipment of the Household Sewing Machine Company, yesterday and today. This business, which changed hands about two years ago, is controlled by interests practically identical with the Siegel-Cooper Company, New York. A fire, which destroyed the main factory building about a year ago, seriously interfered with manufacturing plans, and the final outcome was the sale of the property, which has been widely known for many years. Everything, real estate, machinery and stock in hand was disposed of to a number of bidders. W. J. Dunn, Fall River, Mass., bought the foundry and factory buildings proper, and the New York Central Realty Company took the remainder.

The Wolverton Motor Company, Grand Rapids, Mich., has secured an option on a tract of land at Bridgeport, Conn., with a frontage of 600 feet on the harbor, and it is announced in connection with a petition presented the Bridgeport city government that it is proposed to build a shop for the manufacture of marine motors. The main building will be 40 x 150 feet. It will be necessary, however, for the City Council to abolish two streets which have never been used, and the plans of the Wolverton Company are dependent upon this action.

Various rumors are afoot of new automobile factories in New England. One is that the Taunton Locomotive Works, Taunton, Mass., now being dismantled, will be occupied for this purpose, and a report from Providence locates the Maxwell-Brisco Company, Tarrytown, N. Y., in the old Hope thread mill, Pawtucket, R. I., the purpose, according to the report, being to use the Pawtucket works for setting up and completing the machines after the preliminary work has been done at Tarrytown.

The city of Providence, R. I., has progressed far enough on its technical High School Building to award the contract, the price being about \$109,000. It is understood that a considerable amount of new machine equipment will be required later.

The city of Middletown, Conn., is considering the establishment of a new pumping station to be used in augmenting the city's water supply. The matter will soon go before the Common Council.

The Golding Mfg. Company, 177-199 Fort Hill square, be in the market for the equipment of a new foundry to be established in connection with the factory at Franklin, Mass., which the company has recently purchased. A property known as the Basset factory has been acquired, and the dye house will be converted into a foundry and the main building strengthened for shop purposes. Nothing will be required excepting the foundry equipment.

The Hendee Machine Company, Torrington, Conn., manufacturer of machine tools, has acquired a tract of land containing 190,000 square feet, bordering on the railroad tracks near the Turner & Seymour factory. The purpose of the purchase is to provide for future needs when the business shall have increased beyond the present plant. It is the company's idea that it will have to go outside of the pres-

ent location and erect a large factory building within a few years.

E. C. Fink of the Boston office of the Prentiss Tool & Supply Company, will hereafter cover central and western Massachusetts for the company, succeeding James W. Murphy, who has had the section for the past five years and who has resigned to become associated with the L. W. Pond Machine & Foundry Company, Worcester, Mass. Mr. Fink has been with the Prentiss Company at its Boston office for the past two years, during which time he has made a wide and favorable acquaintance in the New England trade. Previous to his going to Boston he was for eight years with the Lodge & Shipley Machine Tool Company, including several years as a salesman.

The Holtzer-Cabot Electric Company, Brookline, Mass., has decided to discontinue its New York offices after December 1.

The Jeffrey Mfg. Company, Columbus, Ohio, has recently established a New England branch, with offices in the Oliver Building, 141 Milk street, Boston, Mass. H. C. Freeman, for many years with the home office at Columbus, is the engineer in charge.

Cincinnati Machinery Market.

CINCINNATI, OHIO, November 28, 1905.

Machine tool builders report no change in the situation except that the foreign demand is possibly more active and becoming more general. Whether proposed changes in foreign duties are responsible for this alone and foreign dealers are stocking up with this fact in view, or whether it is simply an expanded demand, is a problem difficult to solve. That Germany, Russia and Japan are buying large consignments of machinery is a well known fact, and as time passes and the results of the recent war gradually diminish there is scarcely a doubt that commercial activity will develop to such an extent that every machine tool builder in America will feel the effect and rejoice accordingly. The weather for November has so far been almost phenomenal, and the structural people are using diligent efforts to complete what buildings are now under way before a decided change comes. In anticipating work for the coming spring along this line it looks as though the tonnage will greatly exceed that of the present year, as the number of buildings under contract is considerably larger than any for some years past.

The National Machinery Company, Tiffin, Ohio, reports continued activity, with great difficulty in making satisfactory deliveries, notwithstanding the additions that have been made in the way of equipment. This condition applies not only to the bolt cutter department, but also to forging and wire nail machines, for which the demand is excellent. Orders are arriving regularly from foreign points and export business is of considerable volume. The outlook for 1906, as the company views it, is for a splendid year.

The I. & E. Greenwald Company reports an unprecedented demand for gears and says that it is having all that it can do. The foundry branch of this plant has been increased, so far as men are concerned, and is being worked night and day. The demand for machinery from the Southern States is largely on the increase and the year has proved a large one.

The Tweedvale Works of the Laidlaw-Dunn-Gordon Company are situated on the Cincinnati, Hamilton & Dayton Railroad and the Cincinnati Belt Line, which gives it connection with the Big Four, Baltimore & Ohio, Southwestern, Norfolk & Western and Pennsylvania railroads, so that shipping facilities are excellent. The company has 14 acres of land, on which are built machine shops, foundries, blacksmith shops and power plant. The main machine shop is 130 x 665 feet, thoroughly equipped with the most modern machine tools and appliances. Standard gauge car tracks run into the south end of this machine shop for delivering incoming freight. Standard tracks are also run into the north end of the shop, over which all machinery outbound is shipped. In this way the raw material goes in at one end, the work is done on it as it travels north, the machines are erected and tested and are finally shipped out at the opposite end from which it entered the building. There are three 15-ton electric traveling cranes, which travel the whole length of the shop and handle all the work through the center bay. The side bays also have traveling cranes for handling the work there. Nearly all of the machine tools are equipped with air or electric hoists for handling the work to be operated on by these machines. The power plant consists of tubular and water tube boilers having a maximum capacity of about 1000 horse-power, with engines and generators of the same power. Two of these engines have direct connected generators which supply electric power to the electrically driven machine tools, cranes and the general lighting of the shops. The power plant also contains one large air compressor for supplying the machine shops and foundries for operating pneumatic hammers, drills, air hoists, sand sifters, &c. There are also two 8-inch artesian wells in the power plant, one of which is operated by a vertical steam

head and the other by air lift. The water is pumped into large cisterns, from which it is pumped through the mains around and through the plant. Another large underwriter fire pump takes water from these cisterns, pumping it into the sprinkling system over the whole plant, the foundries, machine shop and blacksmith shop being equipped with automatic sprinklers. The blacksmith shop is equipped with steam hammers and other modern appliances found in up to date shops of this character. The pattern shop is also equipped with the most modern wood working tools, such as band saws, rip saws, planers, surfacers, core box making machines, &c. The foundry is 130 x 200 feet and has all modern appliances. There are two 20-ton cranes in the main bay and also two large air hoists. The side bays also have air hoists. One of these bays is equipped with molding machines throughout. In the other the cores are made and baked in core ovens which extend through the outside wall of the building. The brass foundry occupies a portion of the bay in which the cores are made. In this department the brass is melted in a Schwartz furnace. The average melt in the iron foundry is 25 tons per day and in the brass foundry 1000 pounds per day. The pattern storage houses (three in number) are 60 x 100 feet, situated south of the main foundry and in close proximity to it for the convenient handling of patterns. The company is at present loaded down with work, a large percentage of it being large crank and fly wheel pumping engines and large crank and fly wheel air compressors, chiefly for the United States, although considerable work is being done for foreign countries both in pumping machinery and air compressors. A large shipment of hydraulic machinery was recently made to Europe and other shipments were sent to India, China and Japan. The company is at present employing in the neighborhood of 700 men and running its large tools night and day, which has been the case for the past five years. It states that prospects for business in its line are unusually good.

Philadelphia Machinery Market.

PHILADELPHIA, PA., November 28, 1905.

The closing days of November are rounding out what is generally conceded to be a very satisfactory month. Many manufacturers of tools and machinery report a largely increased volume of business and in some instances orders taken during November reached a greater value than those taken in any one previous month. A canvas of the machine tool and machinery merchants brings out a like condition, and the amount of business taken aggregates most satisfactory totals in almost every instance. The local market on the whole is in a very satisfactory condition, and while the greater proportion of the business recently placed has been made up of small orders the number has been large and the aggregate total business thus brought up to a good amount.

Manufacturers, as a rule, have more orders on their books than they can conveniently take care of, and with a constantly growing volume of new business the inability to make good deliveries increases. In many cases the time of delivery almost entirely governs the closing of a contract, and it is not infrequent that a sale is lost owing to the extended time required by the manufacturer for the delivery of the desired tool or equipment.

While some of the business recently placed has been confined to tools of the heavier types there has been a good demand for the lighter range of tools and orders taken have been fairly well divided. Special tools, both large and small, have been ordered quite extensively, and on the latter class of work deliveries are probably more extended than on the standard types, as manufacturers are frequently further delayed by the inability to obtain with any degree of promptness various materials entering into their construction.

Inquiries, while probably not quite as numerous as they were earlier in the month, are in good quantity, and would indicate on the surface a good volume of business for the coming month. December, however, as a general rule is not overproductive in new business, the placing of orders in many cases being deferred until after the turn of the year.

There has been practically no change in the foreign demand. Here and there an order is placed for one or more tools or for machinery of various kinds, but the aggregate business is not large. Manufacturers having an established foreign trade for some of their specialties report a fairly even demand. As far as can be learned, however, no large contracts for export are being figured on by builders of machine tools in this territory.

The demand for the smaller engines, boilers and for second-hand machinery would bear considerable improvement. In some lines business is dull, while in others only a fair amount is being transacted. The foundry situation is unchanged; many of the gray iron foundries are still affected by labor troubles, and considerable difficulty is experienced in such cases in getting work out with any degree of promptness. Other plants which have been continuously busy for a long period find it hard, owing to the amount of work already in hand, to furnish castings as rapidly as

customers desire. Steel casting plants still continue unable to meet the demands made upon them by the trade, and are being operated at their utmost capacity in order to make fair deliveries.

The C. H. Wheeler Condenser & Pump Company has recently placed orders with various parties for considerable machinery for replacement and extension of its plant. While most of the requirements have already been contracted for, some minor tools, such as bolt cutters, &c., are still to be placed.

The Department of Supplies of the City of Philadelphia is asking for bids on a number of supplies for various departments, including tapping machines and fittings, pipe cutting machines, portable drills, lathes, chain hoists, jacks and emery wheels, &c., for the year 1906. Bids for these articles, among others, will be received at the office of the department, City Hall, until 10 o'clock December 1, from which office blank forms may also be obtained.

The Champion Blower & Forge Company, Lancaster, Pa., is building a new foundry. The building is to be 70 x 360 feet and will be built of structural steel, contract for the erection of which has already been placed, as has also the order for the foundry equipment, comprising three Paxson-Collient cupolas and general supplies. Additional equipment may also be required in the near future, but has as yet not been finally decided upon.

Guy King, architect, 1503 Walnut street, is receiving estimates for the erection of a power house 45 x 82 feet and a pumping station of about the same size, to be known as the Bark Mill power station, located below Wilmington, Del., for the Delaware Water Company. The power house is to be equipped with three 125 horse-power boilers, engines, generators, compressors, pumps, coal and ashes conveyors, &c.

The Filtration Bureau of the city of Philadelphia is preparing to advertise for bids for the installation of temporary pumps at the Torresdale filter plant. These pumps will have a capacity of 40,000,000 gallons of water a day and it is expected that they can be installed in a few months' time. Plans are also being drawn for the permanent pumping equipment at this plant, which will have a capacity of 250,000,000 gallons per day; but as these could not be supplied for several years it is intended that the temporary pumps on which bids will shortly be asked will enable a limited portion of the city to be supplied with filtered water.

The Baldwin Locomotive Works has completed excavations for its new truck shop at Seventeenth and Buttonwood streets and will immediately engage in the erection of the building. This company has not yet decided upon the machinery equipment or the nature of the power to be used in the building. It is likely, however, that a considerable amount of the machine tool equipment will be supplied from other portions of the plant, which are now somewhat congested.

The Wm. Cramp Ship & Engine Building Company now has under contract a larger number of vessels than it has had at any one time for a number of years. Orders were recently taken for three large steamships of 4000 tons capacity for New York parties. These will be about 400 feet in length, designed for both passenger and freight service. With these the company now has under contract some 15 different vessels in varying stages of construction. A force of nearly 6000 employees is now engaged at this plant and all departments are kept continuously busy. Minor improvements are being made to various departments of the plant and the equipment of the various shops is being added to from time to time as occasion demands.

The Tindel-Morris Company, Eddystone, Pa., has entered a number of orders recently for Tindell-Albrecht crank shaft lathes as well as for finished crank shafts from various automobile manufacturers. The plant of this company is busy in all departments, and judging from inquiries received the company looks forward to a largely increased business in the near future. Recent deliveries include three 17-inch Tindell-Albrecht crank shaft lathes to one of the large automobile companies. The High Duty Saw & Tool Mfg. Company, an underlying company of the above concern, reports the shipment of two large billet cutting off machines, equipped with Tindel high duty saws capable of cutting 13-inch square billets in 20 minutes to the American Locomotive Company, one for the Schenectady and the other for the Dunkirk plant. A smaller machine with a 9-inch saw has also been furnished the Brylgon Steel Casting Company, New Castle, Del.

Wickes Brothers, through their local branch in the Bourse, note a good demand for their various lines during the past month, particularly for air compressors, among other sales of the latter being a 14 x 15 x 14 foot straight line compressor for J. C. Barr, Pittsville, Va. Two sets of special cement rolls have been furnished the Lehigh Portland Cement Company, Allentown, Pa., while extensive deliveries of electrical equipment have also been made to various customers. Inquiries for all their lines continue very satisfactory and a good volume of business is looked forward to.

Cleveland Machinery Market.

CLEVELAND, OHIO, November 28, 1905.

This week disastrous fires destroyed two large shops and damaged another. These concerns are taking immediate steps to rebuild, and considerable new machinery will be required. Reports of improvements to railroad shops in this district may mean some heavy purchases a little later. There is more than the usual quota of new concerns, which will mean new business for the dealers. Much interest attaches to the formation of a large company at Toledo by strong interests with a view to pushing the production of steel vessels for the lake trade in competition with the combine which has long held the great majority of this business. Projects requiring power plant equipment continue to develop in increasing numbers and there are some important developments of plans for the erection of large office buildings. The retail dealers say that business is holding up to the standard of the past two months and there is as yet no tendency to hold off until after the first of the year, a complaint which usually comes about this time.

The plant of T. H. Brooks & Co., iron foundry and producers of structural material, was damaged to the extent of about \$75,000 last Friday night. The structural shop and foundry, together with contents, were almost entirely destroyed. The full damage has not yet been definitely ascertained, but it is believed the greater part of the machinery is badly damaged. The company is fitting up a temporary shop and is preparing plans for immediate rebuilding. It will probably erect a fire proof shop, two stories high and 90 x 350 feet, and will probably have to purchase full shop equipment for structural work, including large punches, angle shears, coping machines, riveters, drill presses, &c. It is the intention to erect a modern power plant with direct connected electrical unit and motor driven machinery. The company will do its own engineering and erecting work.

The machine shop and forge shop of Joseph Dyson & Sons Company on Hamilton street was badly damaged by fire last week, incurring a loss of about \$25,000. For a time the fire threatened to spread throughout the large manufacturing district in that section of the city. A quantity of machine tools and patterns were destroyed, but the heavy forging machines and steam hammers were not badly injured, so that it will probably not be necessary to replace any of them. Some new machine tools may be bought, however. A temporary shop has been fitted up, where rush work is being taken care of.

The Grant Automatic Machine Company has been formed, with \$300,000 capital stock, with H. D. Marble, president; F. M. Warner, vice-president; Charles Harbaugh, secretary-treasurer, and J. J. Grant, superintendent. The company will manufacture a new type of multiple spindle automatic screw machine designed by J. J. Grant, who is well known in the machinery trade, having been formerly identified with the Cleveland Machine Screw Company of Cleveland and the Grant Machine Tool Works of Franklin, Pa. The other gentlemen are prominent in Cleveland, Mr. Harbaugh being secretary of the Atlas Car & Mfg. Company. The company will have offices in the Caxton Building and for a time its machines will be built to order, but later a manufacturing plant will doubtless be established.

John Gill & Sons, contracting engineers, have the contract for the erection of a 17-story bank and office building for the Cleveland Trust Company. About 1200 tons of structural material will be required and the power and mechanical plants will be very complete, including 600 to 1000 horse-power of boilers, lighting plant, freight and passenger elevators, &c. Contracts for the equipment are to be closed in the near future and the building is to be completed within 400 working days.

George S. Ryder & Co., engineers, have the contract for the erection of a factory building and power plant for the Cleveland Worsted Company at Ravenna. About 1000 horse-power of boiler equipment and probably 600 horse-power of engine and generating equipment will be installed. Plans for the layout have not yet been completed.

Bardons & Oliver, manufacturers of turret lathes, have recently sold several large tools for the new shops of the Philadelphia & Reading Railway. The order includes two 4-inch and one 6-inch turret lathes. The company reports business as better than ever, with some nice business from abroad.

The Cleveland Belting & Machinery Company, which is a large dealer in second-hand wood working machinery, engines, boilers and steam appliances, is moving from its present quarters at 10 Long street to a large warehouse at 160 Scranton avenue, where it will have 30,000 square feet of floor space, railroad tracks into building with cranes and other conveniences for handling machinery.

The Youngstown Sheet & Tube Company, Youngstown, which has been making important improvements to its plant, has recently bought the following tools for its machine shop: 200-ton Shafer wheel press, 86-inch Bullard boring mill, 20-inch Baker Bros.' key seater and slotter, from the Motch &

Merryweather Machinery Company, Cleveland; 1500-pound Chambersburg steam hammer from Manning, Maxwell & Moore, Cleveland; 36-inch Johnson lathe from U. Baird & Co., Pittsburgh; 30-inch Bradford lathe from Fairbanks & Co., Pittsburgh, and a 24-inch Pond lathe and a 6-foot Pond radial drill from the Niles Tool Works, Hamilton.

The Toledo Pipe Threading Company of Toledo has increased its capital stock from \$10,000 to \$50,000. The company operates a plant at Sandusky for the manufacture of pipe threading machines, and it is the intention to enlarge the factory and the scope of the business.

The Seneca Wire & Mfg. Company, Fostoria, Ohio, has been incorporated, with \$100,000 capital stock, by Ira Cadwallader, R. Crocker, John Noble, C. C. Anderson and E. A. King of Fostoria. With A. M. Cole of Akron and E. A. Henry of Cuyahoga Falls, these gentlemen have purchased the plant of the defunct Cuyahoga Falls Wire & Nail Company, with which Mr. Henry was formerly identified. The machinery will be moved to Fostoria.

Government Purchases.

WASHINGTON, D. C., November 28, 1905.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until December 5 for a quantity of material for the Eastern navy yards, including rivet forges, metal sawing machines, &c.

The Isthmian Canal Commission will soon purchase eight portable rivet forges.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until December 26 for the following machine tools for the Portsmouth, Boston, New York, League Island and Norfolk navy yards: Schedule 256, exhaust fans; schedule 257, screw machine, planer, cutting off machine, engine lathe, steam hammer, portable boring bar, band saw; schedule 258, metal sawing machine, windlasses; schedule 259, air drills and converting traveling crane.

The following bids were opened November 21 for supplies for the navy yards:

Bidder 16, F. S. Banks & Co., New York; 17, Baird Machinery Company, Pittsburgh, Pa.; 20, George F. Blake, New York; 28, Burke Electric Company, Erie, Pa.; 31, Becker-Brainard Milling Machine Company, Hyde Park, Mass.; 50, Wm. Wirt Clarke & Son, Baltimore, Md.; 54, C. & C. Electric Company, New York; 56, Thomas Carlin's Sons Company, Allegheny, Pa.; 60, Crocker-Wheeler Company, Ampere, N. J.; 61, D'Oiler Engineering Company, Philadelphia, Pa.; 65, M. T. Davidson, Brooklyn, N. Y.; 67, F. W. Devoe & C. T. Raynolds Company, New York; 83, R. W. Geldart, New York; 84, General Electric Company, Schenectady, N. Y.; 86, A. D. Granger Company, New York; 95, Harron, Rickard & McCone, San Francisco, Cal.; 97, Henshaw, Bulkley & Co., San Francisco, Cal.; 104, Handlan-Buck Mfg. Company, St. Louis, Mo.; 120, J. B. Kendall Washington, D. C.; 125, Lenher Engineering Company, New York; 145, Montgomery & Co., New York; 157, Manning, Maxwell & Moore, New York; 158, Manhattan Supply Company, New York; 177, Pacific Tool & Supply Company, San Francisco, Cal.; 180, S. M. Price Machinery Company, Norfolk, Va.; 186, H. A. Rogers Company, New York; 187, Royce & Ricketts, Washington, D. C.; 193, John B. Roache, Brooklyn, N. Y.; 194, L. M. Rumsey Mfg. Company, St. Louis, Mo.; 205, Stroudsburg Engine Works, Stroudsburg, Pa.; 208, Shaw Engineering & Contracting Company, New York; 214, Sherman-Brown-Clements Company, New York; 215, Sprague Electric Company, New York; 225, George C. Thomas, New York; 232, Tatum & Bowen, San Francisco, Cal.; 236, Union Steam Pump Company, Battle Creek, Mich.; 248, Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.; 249, White Hardware Company, Norfolk, Va.; 254, Walter A. Zelnicker Supply Company, St. Louis, Mo.; 256, Frye, Phipps & Co., Boston, Mass.; 258, Norman B. Livermore, San Francisco, Cal.

Schedule No. 177.

Class 2. One double cylinder double friction drum hoisting engine—Bidder 50, \$1714.80; 86, \$1790; 95, \$1551, \$1585, \$1675; 97, \$1925; 125, \$1421; 187, \$1850; 194, \$1870; 205, \$1516; 225, \$1722; 232, \$1552; 254, \$1945; 258, \$1770.

Schedule No. 179.

Class 21. One 5 horse-power 220-volt shunt round direct current motor—Bidder 28, \$180.85; 60, \$167; 67, \$182; 84, \$155; 208, \$225.50; 215, \$167.

Class 22. One motor and attachment for lathe—Bidder 54, \$174.

Class 23. Two self feeding rip saw tables—Bidder 95, \$1516 and \$1546; 97, \$1250 and \$2716; 232, \$1192.

Class 24. One No. 2 die sinking machine—Bidder 31, \$695; 95, \$570 and \$620; 177, \$590.

Class 25. One surface grinding machine—Bidder 97, \$715 and \$880; 104, \$925; 177, \$781.

Schedule No. 213.

Class 102. Seven electric motors—Bidder 28, \$1998.10; 54, \$2058.50; 60, \$2417; 61, \$2396.25; 84, \$1612; 208, \$1934.70; 215, \$2129.

Schedule No. 218.

Class 171. One motor—Bidder 60, \$178.90; 84, \$188; 215, \$173.

Class 172. Two electric motors—Bidder 84, \$586; 248, \$533.

Class 183. Four hydraulic jacks—Bidder 17, \$165.60; 50, \$168; 104, \$132.80; 120, \$166; 145, \$162.40; 157, \$161.40; 158, \$178.80; 180, \$142; 186, \$135; 193, \$139.96; 214, \$160.90; 249, \$173.78; 256, \$168.

Class 186. One valve reseating machine—Bidder 16, \$325; 17, \$312; 83, \$315; 104, \$325; 145, \$325; 157, \$325; 158, \$325; 180, \$325; 186, \$325; 214, \$325.

Class 190. Twelve vertical simplex pressure pumps—Bidder 20, \$648; 65, \$630; 236, \$600.

Bids were opened November 20 on the amended specifications for the power plant for the Capitol at Washington, as follows:

Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., proposition 2, \$1,084,369; deduction, \$596,002, leaving the bid \$488,367; proposition 3, \$901,736; deduction, \$471,929, leaving the bid \$429,807.

J. G. White & Co., New York, proposition 1, \$1,189,250; deduction, \$595,034, leaving bid \$594,216; proposition 2, \$1,059,299; deduction, \$549,377, leaving bid \$509,962.

Carl Leonard de Muralt, New York, proposition 1, reciprocating engines, \$1,164,700; deduction, \$395,500, leaving bid \$769,200; proposition 2, turbines, \$1,119,800; deduction, \$372,500, leaving bid \$747,300.

Lynch & Woodward, Boston, Mass., proposition 1, reciprocating engines, \$862,726; deduction, \$486,957, leaving bid \$375,769.

Hanley-Casey Company, Chicago, Ill., proposition 1, \$1,047,277.85; deduction, \$548,495.65, Babcock & Wilcox boilers, leaving bid \$498,782.20; proposition 2, \$1,047,277.85; deduction, \$556,495.65, leaving bid \$490,782.20; proposition 3, \$1,047,277.85; deduction, \$583,495.65, Atlas boilers, leaving bid \$463,782.20.

McIntosh & Seymour Company, New York, proposition 1, \$903,730, horizontal compound engines; deduction \$481,054, leaving bid \$422,676; proposition 2, \$918,500, vertical engines; deduction, \$488,052, leaving bid \$430,448.

The Schofield Company, Philadelphia, Pa., proposition 1, \$1,015,450; deduction, \$453,647, leaving bid \$561,803; proposition 2, \$974,100; deduction, \$423,844, leaving bid \$550,256.

The following bids were opened November 22 for boilers for the Indian School at Phoenix, Ariz.:

Risdon Iron & Locomotive Works, San Francisco, Cal., Heine boilers and fittings, \$4950, f.o.b. Phoenix.

Charles G. Moore & Co., San Francisco, Cal., B. & W. boilers, with extra grates and tools, but without smokestack and breeching, f.o.b. Bayonne, N. J., \$3574; pressure valves, \$94, f.o.b. San Francisco; steam traps, \$64, f.o.b. San Francisco.

Heine Safety Boiler Company, Philadelphia, Pa., boilers, \$3500, f.o.b. St. Louis.

Baker Iron Works, Los Angeles, Cal., Atlas boilers, \$2948; Deane pump, \$296; Deane single horizontal pump, \$110, f.o.b. Indianapolis.

Atlas Engine Works, Indianapolis, Ind., Atlas boilers, \$2985, f.o.b. Chicago.

Advance Packing & Supply Company, Chicago, Ill., pump, \$65.

Harron, Rickard & McCone, San Francisco, Cal., Erie City boilers, with smokestack and flue, \$5190; Knowles pump, \$116, f.o.b. Phoenix.

N. O. Nelson Mfg. Company, St. Louis, Mo., boilers, \$2785; two extra sets tools, \$540; two extra sets grate bars, \$80, f.o.b. Burlington, Iowa; pump, \$55, f.o.b. St. Louis; 65,000 brick, \$8.75; 30,000 pressed brick, \$8.75; lime, 74 cents; cement in barrels, \$2.36; cement in bags, \$1.85 per barrel, bags 10 cents each extra; unit prices for all pipe and fittings called for, f.o.b. St. Louis.

E. Keeler Company, Williamsport, Pa., boilers, including smokestack and fixtures, \$4797.

A. D. Granger Company, New York, McKnoll boilers, \$4076; for pump, pipe and fittings, lime, cement, &c., \$3390.

Royce & Ricketts, Washington, Wickes boilers, \$4781.

The following supplemental bids have been received for a boiler plant for the Naval Hospital, Washington; the bids were originally opened September 26:

Biggs Heating Company, Washington, class 81, Aultman & Taylor boiler, \$7050; Heine boiler, \$5957; Keeler boiler, \$5957; class 82, \$1950.

Babcock & Wilcox Company, Philadelphia, Pa., class 81, \$7506.

A. D. Granger & Co., New York, class 81, \$6222.

Heine Safety Boiler Company, St. Louis, Mo., class 81, \$5707.

E. Keeler Company, Williamsport, Pa., class 81, \$5850.

National Water Tube Boiler Company, New Brunswick, N. J., class 81, \$5592.

Under bids opened November 7 for the equipment for the Roosevelt power house, Salt River project, Arizona, the S. Morgan Smith Company, York, Pa., has been awarded contract for the water wheels at \$19,165.

The following awards have been made for supplies for the navy yards, bids for which were opened November 14:

Greenlee Brothers & Co., Chicago, Ill., class 32, one automatic cut off saw, \$245.

Arthur Koppel Company, New York, class 33, two turntables, \$80.

J. S. McCormick Company, Pittsburgh, Pa., class 41, one magnetic metal separator and dynamo, \$255.

Drew Machinery Agency, Manchester, N. H., class 42, one self emptying oil separator, \$228; class 43, one 4-inch pipe cutting and threading machine, \$393.

Manning, Maxwell & Moore, New York, class 44, one 3-inch hollow turret lathe, \$4650.

Detrick & Harvey Machine Company, Baltimore, Md., class 45, one open side planer, \$9215.

B. F. Sturtevant Company, Hyde Park, Mass., class 62, three 5-kw. generating sets, \$2250.

General Electric Company, Schenectady, N. Y., class 131, six electric motors, \$3454.

Under bids opened November 7 for supplies for the navy yards the General Electric Company, Schenectady, N. Y., has been awarded class 51, one electric motor, \$1715; Montgomery & Co., New York, class 65, one charcoal furnace, five pumps, &c., \$53.70.

The Fairbanks Company, New York, has been awarded contract for class 167, three milling machines, at its bid of \$5040, under opening of October 17.

Trade Publications.

Oil Engines.—De La Vergne Machine Company, East 188th street, New York. Catalogue; 6 x 9 inches; pages, 74. This is a new catalogue describing the well-known Hornsby-Akroyd engine in its most improved form. The value of the book is greatly enhanced by the addition of much in the way of useful information and suggestions as to desirable applications.

Telpherage.—Dodge Coal Storage Company, United Telpherage Department, Nicetown, Pa. Book No. 53; size, 6 x 9 inches; pages, 56. Gives illustrations with condensed descriptions of a number of installations of trolley conveyors, no two of which are alike. They are classified as follows: Those having hand chain hoists, where it is necessary to raise the load but a small distance; those having electric hoists with which are included self filling bucket hoists, and automatic telpherage, principally used for conveying coal and ashes in power plants. The systems cover a wide range of applications in general manufacturing plants. Those of special interest show the handling of castings, coal, coke, sand, ore, slag, &c.

Machinery.—C. O. Bartlett & Snow Company, Cleveland, Ohio. General catalogue No. 15. Size, 6 x 9 inches; pages, 337. Covers a very wide range of equipment and supplies associated with elevating and conveying, mining and milling machinery, including everything from boilers and engines and power transmission apparatus to the power consumers.

Cement.—Illinois Steel Company, Cement Department, The Rookery, Chicago, Ill. Catalogue. Size, 6 x 9 inches; pages, 61. Has to do with the Universal Portland cement, first placed on the market in 1900 and now made at the rate of 6000 barrels a day. A number of tests of the cement are printed and views of work in which the cement was used. Standard specifications for Portland cement as adopted by the American Society for Testing Materials and the Board of Engineering Officers of the United States Army are appended.

Forge Blowers.—Northern Electrical Mfg. Company, Madison, Wis. Leaflet 145. Concerned with Northern electric forge blower equipments, made in five sizes, ranging in capacities from 75 to 425 cubic feet of air per minute.

Milling Machines.—Cincinnati Milling Machine Company, Cincinnati, Ohio. Catalogue. Size, 6 x 9 inches; pages, 109. Illustrates the complete line of Cincinnati milling machines and attachments, to which there were recently added new sizes of the plain millers. These machines are designed for the quick handling of light work and are particularly adapted for use of manufacturers of hardware and similar goods. The introductory pages contain quite an extended description of the latest improvements and new features. Among the new attachments are one for high number indexing, one for rack indexing, an attachment for milling large cams and one for milling worm wheels. One interesting section deals with motor drive applications. At the end of the catalogue are given tables for high speed steel cutters which will be useful to users of machines equipped with such cutters.

Shoes and Dies for Stamp Mills.—Western Forge Company, St. Louis, Mo. Devoted to the Wilson forged steel shoes and dies for stamp mills. These are described as superior to cast shoes and dies, inasmuch as they are free from blow holes and porous places or soft spots, and they are claimed to never chip off or break.

Damper Regulators.—Richard Thompson & Co., 126 Liberty street, New York City. Leaflet. Deals with Thompson automatic damper and pressure regulators for regulating and controlling high and low pressure steam boilers, induced and forced draft systems, blower engines and steam blowers, balanced valves, &c.

Steam Turbines.—De Laval Steam Turbine Company, Trenton, N. J. Pamphlet. Contains brief description of the

different types of turbine and motor driven machinery manufactured by this company.

Electrical Equipment.—General Electric Company, Schenectady, N. Y. Bulletins and other literature. Bulletin 4417 applies to generating station and substation switchboards for continuous current railway systems operating from three-phase generators. No. 4418 describes a synchronism indicator. No. 4419 deals with new high efficiency high candle-power incandescent units. No. 4420 describes the Thomson high torque induction test meter, type IB. Special publication No. 9139 contains reprints of a paper read before the New York Railroad Club by W. B. Potter on "Developments in Electric Traction," and one on "The Electrification of Trunk Lines," by L. R. Pomeroy. Flyer No. 2163 pertains to the G. E. standard key and keyless electric light sockets; No. 2164, to concentric diffuser for incandescent lamps, and No. 2165 to electroliner key and keyless sockets. Supply catalogue No. 7190 lists G. E. inclosed fuse cut outs and fuses. Two small leaflets are concerned with the Edison lamps and an electric cigar lighter.

Metallic Packings.—United States Metallic Packing Company, 429 North Thirteenth street, Philadelphia, Pa. Catalogue. Size, 4½ x 7 inches; pages, 24. Contains sectional illustrations of the application of metallic packings to locomotive piston rods and valve stems and describes their special points.

Spiral Riveted Pipe.—American Spiral Pipe Works, 1173 South Paulina street, Chicago, Ill. Circulars. The first deals with Taylor's spiral riveted pipe, which is made in sizes from 3 to 40 inches in diameter for working pressures up to 600 pounds and fitted with forged steel flanges on all sizes up to 24 inches. The other circulars deal with the Swartwout cast and galvanized iron exhaust heads.

Forged Steel Balls for Ball Mills.—Allis-Chalmers Company, Milwaukee, Wis. Bulletin. Issued by the Mining and Crushing Machinery Department. Dwells on the usefulness of forged steel balls for the pulverizing of raw materials. The uses of the ball are classified under two general heads: For mining and metallurgical industries and for general manufacturing. Under the former heading tabulated figures give noteworthy results obtained from their use in ore reduction works. In the manufacturing field ball mills are used to some extent by paint and chemical factories and by manufacturers of mineral fertilizers, chalk, rock salt, white lead, glass mixtures, mineral dyes and other products, the raw materials for which are brittle and can be readily crushed by the impact of the ball.

Screw Thread Rolling.—E. J. Manville Machine Company, Waterbury, Conn. Booklet, entitled "The Art of Screw Thread Rolling." Contains an interesting account of its origin, development, scope and practical utility and lucidly describes the process as it is performed on the company's thread rolling machines. The text is fully illustrated with sketches and half-tone engravings.

Gasoline Engines.—Globe Iron Works Company, Menominee, Wis. Three circulars. One illustrates the White gasoline engines of stationary, portable and marine types. The other two specialize on the White high speed marine gasoline engine, made in two, four and eight cylinder, four-cycle pattern in sizes from 10 to 100 horse-power, and the stationary and portable engines are made in sizes of from 4 to 25 horse-power.

Well Drilling Tools.—St. Louis Well Machine & Tool Company, St. Louis, Mo. Circular I. Contains specification tables of sizes and prices of rope sockets, jars, joints, stems and sinkers, drilling bits, reamers, Lane expansion reamers, wrenches, tool jacks, sand pumps, bailers, &c.

Gasoline Marine Engines.—The Progressive Mfg. Company, Torrington, Conn. Catalogue. Size, 6 x 9 inches; pages, 18. Describes the special features of the Eagle marine engines, made in single and double cylinder, two-cycle form, and in two and four cylinder, four-cycle form. The Torrington engine, a cheaper single cylinder two-cycle engine, is also illustrated. Brief reference is made to the Eagle stationary gasoline engine.

Turret Lathes.—Gisholt Machine Company, Madison, Wis. Catalogue. Size, 8¾ x 9¾; pages, 39. Devoted to the Gisholt turret lathe and its accessories. The lathes are uniform in design, so that one description covers all sizes. Half-tone engravings show the six regular sizes having swings of from 14 to 41½ inches and the four big bore Gisholt lathes swinging from 21 to 28 inches. One of the latter types is illustrated as used in making projectiles. Other illustrations show applications of motor drive, a gap lathe, numerous views of the Gisholt lathe performing various operations and samples of work done. The last three pages deal with Gisholt boring mills and universal tool grinders.

Finished Machined Parts.—Standard Gauge Steel Company, Beaver Falls, Pa. Catalogue and price-list. Size, 4¼ x 6¼ inches; pages, 96; leather. Illustrates a larger variety of specialties than any of the company's former issues. Covers finished machine keys, gibs and keys, key-seating shafts, finished machine racks, lead screws, feed screws, press screws, adjusting screws, worms, compressed steel elevator guides, shaft couplings, special shapes, &c. Useful information and tables of weights and measures are appended.

Electric Cranes.—Sprague Electric Company, 527 West Thirty-fourth street, New York City. Leaflet. Sheet 220-046C and 046 D. Contains illustrations of a hand geared bridge and electric hoist and a three-motor electric crane.

Census of Maryland's Iron and Steel Industry.

WASHINGTON, D. C., November 28, 1905.—The Census Bureau has completed the compilation of the first quinquennial census of the industries of the State of Maryland covering the business year 1904. This is the second State for which the five-year census has been completed, but it is the first for which the figures have been gathered exclusively by Federal enumerators, the Michigan census having been taken in co-operation with State officials. The importance of the seaboard establishments engaged in the manufacture of iron and steel and in steel shipbuilding in Maryland lend special interest to these returns.

A comparison of the quinquennial census returns with those of the twelfth census, which, though commonly referred to as the census of 1900 covered the business year 1899, affords a very interesting exhibit. In the iron and steel industry, as it covers steel works and rolling mills, there has been a decline in the number of establishments, employees, wages paid, materials consumed and products, although the capital shows an important increase. The census of 1900 embraced returns from nine establishments, but in 1904 there were but seven. The capital, however, increased from \$2,899,690 to \$4,111,185. The item of capital relates in no way to stocks or bond issues, but simply to land, buildings, machinery, tools and implements, cash and sundries.

The branch of the industry engaged in the manufacture of foundry and machine shop products makes a more satisfactory showing. The general tendency toward consolidation is shown in the reduction in the number of establishments from 113 to 98, although the capital increased from \$6,381,676 to \$6,819,161.

The iron and steel shipbuilding industry reflects a healthy condition that is especially gratifying in view of the decline that has marked this branch of the trade in recent years. A reduction from four to three in the number of establishments is noted and a decline in capital from \$3,822,588 to \$3,068,366, while the value of the product rose from \$3,299,491 to \$3,516,314.

The changes in classification make it impossible to present an accurate comparison of the industries engaged in the manufacture of stoves and furnaces and tinware and in copper-smithing and sheet iron working. In the twelfth census stoves and furnaces were included under miscellaneous industries to avoid disclosing the operations of the manufacturers. Following are the detailed returns of those industries of special interest to the readers of *The Iron Age*:

	Cars and railroad shop construction.		Foundry and machine shop products.	
	1900.	1904.	1900.	1904.
Establishments	19	21	113	98
Capital	\$2,877,954	\$2,303,354	\$6,381,676	\$6,819,161
Wage earners	3,620	4,977	4,695	3,759
Wages	\$1,849,737	\$2,836,848	\$2,251,777	\$2,361,103
Miscellaneous expenses	\$50,163	\$99,915	\$456,175	\$1,090,925
Materials	\$2,567,486	\$2,610,228	\$3,322,658	\$2,801,678
Products	\$4,573,229	\$5,751,908	\$8,443,547	\$8,525,583
Iron and steel ship building.				
	Hardware.			
	1900.	1904.	1900.	1904.
Establishments	10	6	4	3
Capital	\$107,640	\$57,832	\$3,822,588	\$3,068,366
Wage earners	65	42	1,939	2,050
Wages	\$21,161	\$15,996	\$1,185,832	\$1,015,653
Miscellaneous expenses	\$3,220	\$5,470	\$110,916	\$179,041
Materials	\$92,234	\$30,217	\$1,497,554	\$1,364,416
Products	\$173,512	\$97,021	\$3,299,491	\$3,516,314
Steel works and rolling mills.				
			1900.	1904.
Establishments			9	7
Capital			\$2,892,690	\$4,111,185
Wage earners			2,138	1,534
Wages			\$1,029,753	\$811,128
Miscellaneous expenses			\$508,298	\$284,926
Materials			\$6,888,916	\$6,582,085
Products			\$8,739,405	\$8,106,929

The Census Bureau is making a special effort to complete the returns of industries at the earliest possible date, and it is now predicted that the work will be finished prior to June 1 next. If this expectation is realized, as now seems probable, the industrial census will have been published within 18 months of the close of the period covered thereby, thus breaking all previous records.

W. L. C.

The Pennsylvania Engineering Works.

This company, whose plant is at New Castle, Pa., builds a complete line of iron and steel work for blast furnaces, metal mixers, converters, open hearth furnaces, ingot and open hearth charging cars and heavy rolling mill equipment. The works are extensive and well equipped. The machine shop is 82 x 315 feet, served by two electric traveling cranes of 25 tons and 30 tons capacity each, and contains a full equipment of large and modern machine tools. The foundry, which is directly behind and in line with the machine shop, is 60 x 340 feet and is served by three traveling cranes of 20 tons capacity each. It contains three cupolas of 20, 8 and 5 tons capacity per hour, with the necessary core ovens. A lean-to addition has recently been made to the foundry, 30 x 140 feet, served by a 5-ton traveling crane, in which core work and some of the lighter molding are done. The main boiler shop lines up with the machine shop and runs back parallel with it for a distance of 300 feet. This department is 60 feet wide and is served by two electric traveling cranes of 15 tons capacity each. Connected with and extending at a right angle from these buildings is an assembling department 30 x 110 feet, served by another 15-ton crane, while parallel to the main boiler shop and along one side of same is the structural and flanging department. A smith shop with nine forge fires and two steam hammers and a well equipped pattern shop make up the balance of the producing departments of this plant.

The Pennsylvania Engineering Works has recently furnished some heavy equipment for rolling mills and blast furnaces, among which is a 250-ton metal mixer for the Tennessee Coal, Iron & Railroad Company, Ensley, Ala., designed by the Wellman-Seaver-Morgan Company, Cleveland; two 10-ton converters for the New Castle Works of the Carnegie Steel Company and which were duplicated for the Deering Harvester Company, South Chicago; a 250-ton metal mixer for the Newburg, Ohio, plant of the American Steel & Wire Company and designed by Julian Kennedy. The company is operating its plant to full capacity and has a very large amount of work on hand. Edward King is president and treasurer; Edwin N. Ohl, vice-president; E. W. Beadel, general manager and chief engineer; Charles L. Baldwin, secretary; W. H. Shieler, superintendent, and Charles R. Darrow, assistant general manager.

The United Sheet & Tin Plate Company.—W. S. Ravenscroft, president of this company, whose works are at Newark, Newcomerstown and Marietta, Ohio, and Connellsville, Pa., has purchased the interests of L. C. Taylor and D. A. Garden in the company. Mr. Taylor has resigned as secretary and was succeeded by M. S. Kline, cashier of the Elk County National Bank, Ridgway, Pa., who is also treasurer. Mr. Garden has resigned as general manager and has been succeeded by George J. Humbert, formerly president of the Humbert Tin Plate Company, Connellsville Pa. The company is overhauling its plants and getting them in shape for operation. It maintains branch offices on the eleventh floor of the Diamond Bank Building, Pittsburgh.

The Ashland Iron & Mining Company, Ashland, Ky., blew out its No. 2 furnace November 11 for extensive repairs, and on November 14 blew in its No. 1 furnace, which has been rebuilt in the past year and equipped with an additional stove. The No. 2 furnace had been in blast four years nine months and twenty days, running exclusively on high silicon iron and Bessemer ferrosilicon. The furnace will now be relined in addition to general repairs, and three new hot blast stoves will be built or the present stoves enlarged. The company is now ready to receive proposals on this work. The No. 1 furnace will continue the manufacture of Bessemer ferrosilicon and high silicon foundry iron.

Underground telegraph lines between Glasgow and London are expected to be completed before the end of the year. The drawing in of the wires is a slow process, the pipes having been laid some months ago.

HARDWARE

WE have received a letter expressing the sentiments of retail merchants in a city in which a jobbing house has a retail department. Complaint is made that the methods pursued by the jobber in question are seriously detrimental to the interests of the retail merchants in the city, and in support of this claim they call attention to the following features of the management of the retail department of the jobbing house, pointing out:

I. That its "catchy ads." announce cut prices on Guns, Cutlery, &c. These prices are referred to as not only affecting merchants of the city, but other retailers in the States where the papers containing the advertisements circulate.

II. It is claimed that the Builders' Hardware trade in the city is ruined by the low prices made by the house in question to contractors and other consumers, and that in many cases the prices made by the retail department are less than the prices of the wholesale department to the trade.

III. A further cause of complaint is in the fact that the salesmen of the jobbing house visit factories, contractors and other consumers throughout the city and that where they cannot thus reach the consumers the mails are used in order to get the business.

The way in which these methods are regarded by the merchants of the city who have to encounter this competition illustrates the difficulty which attends the carrying on of a retail department in connection with a wholesale business. There is obviously great danger that an enterprising prosecution of the retail business, which might be justified in a concern doing only a retail business, will conflict with the jobbing house's wholesale trade unless peculiar care is given to safeguarding the interests of the retail merchants, with whom it is desirable to continue the most amicable relations. If the methods of the jobbing house in its retail department are regarded with disapproval by the retail trade the wholesale department must necessarily suffer. To conduct the retail department efficiently and at the same time to keep the most cordial relations with the retail merchants of the city and community obviously requires exceptional tact and good management. It is to be regretted that in many cases the welfare of the retail merchants is too much disregarded.

In view of the fact that the time for the annual inventory is at hand we devote in this issue considerable space to the description of methods adopted by merchants of ability and experience in this important work, which is so closely connected with the closing of the accounts of the year. It is not claimed that in all respects these methods are characterized by novelty, but we are confident they will be found suggestive to all who study them and take the pains to make themselves familiar with the systems described. Some of our readers who have not an entirely satisfactory system of stock taking may deem it desirable to adopt one of the methods explained and apply it to their own establishments, with such modifications only as are necessary under the special circumstances of the case. Others will find some detail or special feature of some of the methods which may be advantageously incorporated in the plan under

which they are accustomed to take stock, thus rendering it more accurate, convenient or expeditious.

Some merchants are negligent in this matter and fail to make at the close of the year a detailed and correct inventory of their stock, thus rendering it impossible for them to ascertain the results of the year's business and whether or not they are making or losing money. We therefore emphasize the importance of the annual stock taking as a matter which should receive the most careful attention from every merchant and manufacturer. While it is desirable that the best attainable method for accomplishing this troublesome piece of work should be adopted, it is a matter of primary and fundamental importance that an inventory be taken in some way, even though it be under a crude and defective system.

Our Washington correspondent sounds a timely note of warning in regard to Parcels Post legislation. His letter refers to the campaign which so soon will open, in which efforts will be made in the interest of the catalogue houses to increase greatly the opportunity for the transmission of merchandise through the mail. It will be seen that powerful support which has not heretofore been in evidence as using its influence in this direction will be given to the movement for the merchandise post. At the same time it is interesting and encouraging to note that a great organization representing the traveling fraternity is active in opposition to the proposed legislation. The appreciative manner in which our correspondent refers to the intelligent and individual work done by Hardware merchants and their associations suggests the importance of continuing the use of such means of influencing Senators and Representatives.

Condition of Trade.

While the prosperity of the agricultural classes is well known and the great crops of the year are often alluded to in a general way the additions thus made to the wealth of the country are brought forcibly to the attention of the public in the summary which has gone out from Washington of the forthcoming report of the Secretary of Agriculture. The fact that the year is unprecedented in the volume and value of its farm products cannot but affect the general tone of business, as the prosperity thus reflected and produced must in the natural course of things influence the trade favorably, as the money thus realized goes into circulation to the advantage of all classes from the laborer to the capitalist and from the retail center of distribution to the source of supplies in factory and mine. The state of business as the year draws to a close corresponds with the confidence which prevails. Manufacturers find their order books well filled and in some cases crowded. Railroads have difficulty in moving the great quantities of produce, raw material and finished goods the transportation of which overtaxes their facilities. Prices in the line with which we have to do are decidedly firm and advances are gradually taking place in many lines. In Hardware some of the advances which have gone into effect leave the jobbing trade in a position to undersell the manufacturers and in many instances they are do-

ing this, and there is perhaps too general a disposition on their part to give their customer the advantage of purchases made at lower figures than are at present obtainable. The volume of current business is large, although as a rule wholesale and retail houses have for the most part covered their requirements up to the end of the year, and there is a general reluctance to buy goods just before the annual inventory unless they are required immediately. There is, however, a good deal doing, especially in holiday and winter goods in taking care of the business of houses who do not buy in better season or whose stocks are becoming depleted.

Chicago.

While the retail Hardware trade generally is devoting most of its time and attention to the sale of holiday goods, demand for staple lines continues fair and the falling off in demand, which is customary at this season of the year, is not nearly as great as in former years. This no doubt is largely due to the long period of open weather, which has been favorable for building operations and has been taken advantage of in both urban and farm communities. Demand for Builders' Hardware, while not as insistent as several months ago, is still brisk and manufacturers generally continue behind on deliveries. The volume of business done by local jobbers in Builders' Hardware during the season just coming to a close has surpassed all records, which is due to the large amount of building, this being the record year for this city since the Chicago World's Fair. Continued advances in raw materials are followed by higher prices for finished products. The high prices prevailing for cotton have brought about an advance in Sash Cord and advances in other cotton goods are anticipated in the near future. Higher prices are also anticipated on Sheet Copper and Rods owing to the constantly advancing prices on Copper, and the advance announced last week on Black and Galvanized Sheets will probably result in an early advance on all classes of Sheet Metal goods. At a meeting of the Screw manufacturers held in New York general trade conditions were discussed and, while prices were reaffirmed, a better basis will be maintained in the future. Enameled Ware shows no improvement in price and the price cutting is no doubt due to an overproduction resulting from the large number of new plants called into existence in the past few years. Dealers in Heavy Hardware report heavy sales of Horseshoers' supplies and the demand for all kinds of Wagon and Implement Hardware continues unabated.

NOTES ON PRICES.

Wire Nails.—The market continues in excellent condition, with a better understanding between the manufacturers than has sometimes prevailed, so that they are working with a good degree of harmony without formal agreement. Manufacturers are fully employed filling orders, but will probably soon begin accumulating stock for spring demand. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....\$1.80
Carload lots to retail merchants..... 1.85

New York.—The local market has been demoralized for some time, Nails having been sold in small lots from store on the basis of about 10 cents advance on the ruling Pittsburgh carload price. It is true that many of the Nails had been contracted for previous to the two advances of \$1 per ton each in September, but Nails purchased at the advances came into direct competition with the cheaper ones. As the result of concerted action on the part of leading jobbers the minimum prices has now been fixed on the basis of \$2.05 for small lots from store. This understanding is an echo from the manufacturers' meeting held in Chicago on the 20th inst.

Chicago.—Demand for Wire Nails continues remarkably heavy and indications point to an advance of at

least \$1 a ton and possibly \$2 a ton about the first of the year. The heavy buying movement for the spring trade has not yet set in and it has been hinted that these advances will probably be made to prevent any speculative movement. While the new tonnage that is being closed is naturally not as heavy as it has been, it is much greater than is usually taken on at this season of the year and with the heavy specifications that are being daily received the mills are not catching up on deliveries. Prices are being unusually well maintained, all concessions and differentials having been eliminated, and conditions are more satisfactory than they have been in many months. No change has been made in prices, which are as follows: \$1.95 in car lots to jobbers and \$2 in car lots to retailers, with an advance of 5 cents for less than car lots from mill.

Pittsburgh, by Telegraph.—New demand for Wire Nails continues heavy and specifications on contracts are coming in very liberally, so that the mills are full of work and getting out a very large tonnage. Shipments of Wire Nails in November have been very large and will compare favorably with October, but were probably not quite as heavy as last month. Some of the mills favor an advance in the price of Wire Nails owing to high cost of raw material, but this will hardly be made before the first of the year at least. We quote Wire Nails at \$1.80 in carloads to the largest jobbing trade and \$1.85 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—New business received by the mills is fair, but specifications on contract orders amount to a much larger volume. At the meeting of the Cut Nail Association, held on the 28th inst., an advance was made in the price of Steel Cut Nails as follows: \$1.70, base, for carload lots, f.o.b. Pittsburgh; \$1.75 for less than carloads, f.o.b. Pittsburgh; \$1.85 for carload lots, on dock, New York; \$1.90 for less than carloads, on dock, New York.

New York.—Merchants are supplying their requirements from time to time as they arise, but are not stocking up. Orders are now generally for such particular sizes and kinds as are called for as buildings in their neighborhoods progress. There are indications of a somewhat stronger market, but prices continue more or less irregular owing to competition. Regular quotations for small lots from store are, however, on the basis of \$1.90.

Chicago, by Telegraph.—Local jobbers report both Iron and Steel Cut Nail mills from three to four weeks behind on deliveries. Western demand is better than it has been at any time in the past five years and higher prices are ruling. Steel Cut Nails in carloads are held at \$1.85 to \$1.90 and Iron Cut Nails \$2 to \$2.05.

Pittsburgh, by Telegraph.—The Cut Nail Association met yesterday. The market is quite firm, current orders being fairly large and specifications on contracts quite liberal.

Barb Wire.—Demand is now confined largely to specifications on contract orders. The requirements of the trade will naturally diminish until the spring revival commences in this line. The market is firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$1.95	\$2.25
Retailers, carload lots.....	2.00	2.30
Retailers, less than carload lots.....	2.10	2.40

Chicago.—There is practically no change in the situation, as little new business is placed at this season of the year, and the tonnage that is reaching the mills is on specifications on contracts closed some time ago. The heavy buying of Barb Wire will set in after the first of the year. Quotations, however, are unusually well maintained, as follows: To jobbers, Chicago, car lots, Painted, \$2.10; Galvanized, \$2.40; to retailers, car lots, \$2.15; Galvanized, \$2.45; retailers, less than car lots, Painted, \$2.25; Galvanized, \$2.55; Staples, Bright, in car lots to jobbers, \$2.05; Galvanized, \$2.35; car lots to retailers,

10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh, by Telegraph.—New business very light, but buyers are specifying liberally on contracts placed some time ago. There is some agitation for an advance in prices of Barb Wire, which may possibly be made about January 1. The market is very firm. Official prices are being rigidly held. We quote Painted Barb Wire at \$1.95 and Galvanized at \$2.25 in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—Mill shipments and deliveries are not as large as the specifications received on contract orders. New business is comparatively light. The tone of the market is firm at the following quotations, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.65
Retailers, carloads.....1.70

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....\$0.30	.35	.40	.45	.55	.65	1.05	1.15		

Chicago.—Smooth Wire specifications continue greatly in excess of mill shipments and the congestion, therefore, continues unabated. All of the large buyers covered some time ago for requirements extending well into next year. Quotations continue to be well maintained, as follows: \$1.80 to jobbers, f.o.b. Chicago, in car lots, and to retailers, car lots, \$1.85.

Pittsburgh by Telegraph.—New business is very light, but the mills are filled up on contracts on which buyers are specifying very liberally. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....\$1.65
Retailers, carloads.....1.70

The above prices are for base numbers, 6 to 9.

Bare Copper Wire.—Bare Copper Wire, sympathizing with the higher price for Ingot Copper, has advanced to 18¾ cents per pound in carload lots or more, based on New York and adjacent territory deliveries, distance from the source of supply owing to increased freight further increasing the price. In less than carloads it is quoted ½ cent per pound higher, or 19¼ cents.

Copper and Brass Goods.—Present indications point to higher prices for many materials manufactured wholly or partially of Copper, made necessary by the continued advances in that metal. The large manufacturers are quite generally covered for, say, two or three months ahead, many buyers, however, being content with hand to mouth purchases on a high market. Deliveries of sold material continually become more difficult. Current conditions seem to be founded on a legitimate demand for Copper and what it appreciably enters into, which expressed in figures represents, it is said, an increase in consumption of 20 per cent., against an increase in production of 10 per cent. Regardless of the accuracy of these figures, however, advanced prices are looked for after December 1 next. This is indicated by the withdrawal of prices on Brass and Copper goods by some well informed interests. At present Sheet Copper is still 21 cents, base; Copper and Brass Brazed Tubing is 27½ per cent. discount, which is shaded for fair lots from stock. Brass and Copper Wire and Rods, except Bare Copper Wire for electrical construction, are still unchanged. Copper Rivets and Burrs have advanced from 50 and 10 and 5 per cent. to 50 and 10 per cent. discount and 37½ per cent. discount for Burrs only. Soldering Coppers are based on 21½ cents in large lots, with 2 cents per pound advance for fair quantities of good quality. Brass Escutcheon Pins range in price from 60 and 10 to 70 per cent. discount, according to quantity.

Table Cutlery.—Although the agreement between the manufacturers of Table Cutlery expires by limitation December 1, there seems to be a conservative feeling preva-

lent among them so that there is not likely to be an important reduction in price. While there is little doubt that somewhat lower figures will be named, the fact that prices for some time have been on a conservative basis, as the association avoided the mistake of maintaining them on an unduly high level will have the effect of preventing as violent a reaction as would otherwise be likely to occur. The general condition of business is so good that it would be unwise for the manufacturers to sacrifice the advantage of a large and profitable trade which is thus within their reach. Fortunately they appear to be disposed to be conservative and thus serve at once their own interests and those of the trade at large.

Wrought Brass Butts.—An upward tendency of the market reflecting higher prices for products constituted in large part of Copper is indicated by the recent concerted advance in the price of Wrought Brass Butts, the discount of which is now 15 per cent., an extra 5 per cent. being obtainable for round lots.

Sap Spouts.—Charles C. Stelle, 81 Fifth avenue, Brooklyn, N. Y., is quoting the following prices for Post's Improved Eureka Sap Spouts for the coming season:

	Per 1,000.
No. 1 Regular.....	\$16.00
No. 2 Regular.....	13.00
No. 1 Short.....	14.50
No. 2 Short.....	11.50

In lots of 15,000 or over a discount of 30 per cent. is made; shipments f.o.b. New York; terms, net cash March 20.

Building Paper.—The market for Building and Roofing Papers shows a distinctly firmer tone owing to increased demand and other contributing causes. Tarrd Roofing Felts are now quoted in fair quantities at \$32.50 per ton for single ply, 55 cents per roll for two-ply and 75 cents per roll for three-ply. Rosin sized sheathing brings from \$30 to \$32.50 per ton in fair lots and deadening felt, \$50 per ton.

Stamped, Pieced and Galvanized Ware.—While conditions affecting the market for Sheet Metal Ware remain the same, the general tone is somewhat strengthened by the recent advances in raw material. It is also reported that the current quotations of one of the largest manufacturing interests, though not uniformly higher, show on the average an advance. This, though small, is interesting, coming as it does so soon after the discontinuance of association control of prices. The meeting of the association held last week is understood to have been more harmonious than was expected, and it is now hoped that owing to the present low range of prices and the advances in raw material already referred to competitive cutting may to a good extent be avoided.

Rope.—The market continues satisfactory to manufacturers, both in relation to demand and prices. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality Sisal, 8 cents per pound.

Window Glass.—It is reported that the American Window Glass Company has reduced its prices to 90 and 30 per cent. discount for the first three brackets, except 16 x 20 and 16 x 22, and that its price for all sizes above the third bracket is 90 and 10 per cent. discount. Generally prices are as low as last year, while the cost of manufacture is greater. It has reached a point, according to figures, where the selling price is lower than the cost of production to a large portion of hand made manufacturers, and has been the cause of some factories going out of blast. Demand from jobbers is light, owing to the uncertainty of the market's future.

Linseed Oil.—The market at this point is irregular, prices ranging, on the basis of State and Western Raw, from 36 to 38 cents per gallon, according to seller and buyer. The supply of Oil is sufficient for all requirements, which are naturally light at this season. The price for delivery on contract orders is 35 cents. Boiled Oil is held at 1 cent advance over Raw.

Spirits Turpentine.—Prices have continued to decline during the week under review and are 1 cent less than at our last report. Local demand is small, being of a hand

to mouth character. The unsettled condition of the market does not inspire buyers with confidence. New York quotations are as follows, according to quantity: Oil barrels, 63 to 63½ cents; machine made barrels, 63½ to 64 cents.

SIMONDS MFG. COMPANY.

THE annual meeting of the branch house managers and salesmen of the Simonds Mfg. Company, manufacturer of Saws, was held at the main office and works, at Fitchburg, Mass., during the week beginning November 20, with the usual excellent results which come from thorough discussions of this sort. The company feels that the mutual benefits received are entirely sufficient to warrant this annual gathering. At the conclusion of the meeting an earnest and sincere demonstration of regard was tendered by all present to Daniel Simonds, the president of the company. Those who attended the meeting were: Daniel Simonds, president; J. E. Kelley, secretary; G. K. Simonds, treasurer; M. Simonds, assistant treasurer; H. B. McDonald, assistant superintendent; T. F. Howarth, auditor, and H. D. Horton and W. G. Fisher of Fitchburg; C. F. Braffett, E. F. Simonds and A. T. Simonds, vice-presidents; C. A. Hubbell, superintendent; W. L. Taylor, traffic manager, and R. H. Newman, salesman, of the Chicago branch; L. A. Kimball, manager, and Spencer Patterson, salesman, of the New York branch; H. A. Sargent, manager; R. R. Fox, assistant manager, and E. Clark Evans, salesman, of the Portland and Seattle branches; G. K. Smith, manager, and L. E. Bowman, salesman, of the New Orleans branch, and F. C. Johnson, manager of the Simonds Saw Company, San Francisco.

A RECORD SHIPMENT OF HARDWARE.

HIBBARD, SPENCER, BARTLETT & CO., Hardware jobbers, Chicago, last week made a record shipment of an order for a complete stock. One of the company's salesmen brought a customer from the Northwest whose store and stock had previously been destroyed by fire to the Chicago store. A stock order of 70 pages was sold, requiring constant work for a period of two days. The order was filled and packed while the salesman was selling it. As soon as a certain line of goods was decided upon the order was taken to the packing and shipping department, where the goods were immediately prepared for shipment. The customer finished buying at 12 o'clock noon Thursday, November 23, and the bill was shipped on the company's lighter at 3.50 that afternoon and loaded in a car and sealed at 4.45 the same day. This order was therefore sold, filled, packed and shipped in 48 hours. There were only three items short on the entire bill and the book was in the pricer's hands before the customer left the store. The goods were sold for shipment to Minnesota at a point about 450 miles from Chicago, and arrangements were made with the Chicago & Northwestern Railroad to forward the same as speedily as possible. The car arrived at its destination early Sunday morning, November 26, less than 60 hours from the time of sealing.

THE control of the Athol Machine Company, Athol, Mass., has been purchased by interests identical with the L. S. Starrett Company of that town. The two companies will not be merged, the corporate existence of the Athol Machine Company being retained and the two establishments conducted under distinct managements. The new owners of the stock are L. S. Starrett, F. A. Ball, F. E. Wing, W. G. Nims and N. B. Waterman, all associated with the Starrett Company. The new officers of the Athol Company are: President, F. A. Ball; vice-president and treasurer, L. S. Starrett; clerk, F. E. Wing. The Athol Machine Company changed ownership a few years ago, when Stephen H. Bellows sold his holdings of stock to S. E. French, F. S. Ewing and D. T. Bates, all of Orange, Mass. Mr. Ewing will retire from the business. Mr. French will be the superintendent. The company conducts a general foundry business, and manufactures vises and meat choppers and a line of mechanics' tools. All these lines will be continued.

BUTLER BROS.' BOOKLET.

ABOUT the first of the year Butler Bros., who are well known to the trade as a house doing a mail order business with merchants exclusively, with large establishments in New York, Chicago and St. Louis, will issue a booklet entitled "The Butler Way"—Hardwaremen's edition. The matter contained in this booklet has been designed especially for the Hardware merchant and cannot fail to be suggestive and helpful to those who are on the lookout for new methods. If the booklet "directly or by suggestion helps a Hardwareman who wants to do better hard enough to be ready to make the necessary effort" the publishers say it will have served the purpose they had in mind in issuing it. A chapter touches on the necessity of displaying goods so that they will speak for themselves and making the stock and store attractive. Window displays are taken up and the principles to be followed in making use of this means of tempting people into the store are set forth. The getting out of printed matter, catalogues, circulars, &c., and newspaper advertising are treated at length. The course to be pursued in overcoming the competition of the retail catalogue houses is also given detailed attention. Plans for getting business are described, many of which are ingenious and suggestive. The booklet closes with "Stories of Success" on the part of merchants who with small capital and enterprising and aggressive methods have built up a profitable business. The booklet also contains numerous illustrations of store arrangement and fixtures which may be used advantageously in the display of goods. This exceptionally interesting and suggestive booklet will be sent to merchants on application.

RELIANCE EDGE TOOL COMPANY.

THE RELIANCE EDGE TOOL COMPANY was organized at Youngstown, Ohio, on November 15, the following directors being elected: John C. Wick, president of the Wick National Bank; Robert Bentley, president of the Ohio Iron & Steel Company; W. A. Beecher, vice-president of the Mahoning National Bank; Edward L. Brown, capitalist, and George E. Dudley, all of Youngstown, Ohio. The directors organized by electing Edward L. Brown president, Walter A. Beecher vice-president and George E. Dudley secretary and treasurer. Charles H. McCarty, until recently treasurer of the Winsted Edge Tool Works, manufacturer of the T. H. Witherby brand of Chisels, has been elected general manager of the company. Mr. McCarty has had a very thorough experience in the manufacture of Edge Tools. The new company's product will be known to the trade as the Reliance and at first will consist of Carpenters' Tools, such as Chisels, Gouges and Drawing Knives. The concern has let a contract to Heller Brothers of Youngstown for the erection of a main brick building 325 feet in length, a large portion of which will be two stories in height. The company expects to be in the market with its products very shortly after January 1.

DEATH OF JOSEPH FEARON MANN.

JOSEPH FEARON MANN, who died from pneumonia at Lewistown, Pa., on the 22d inst., was born in 1841 near the place of his death. He was the third son of William Mann, Jr., who established the very successful business of William Mann, Jr., & Co., near Lewistown, in 1837. He became a member of that firm in 1861. In 1867 he retired from the business, discouraged by the loss of an eye caused by a spark from an anvil. In 1875 he succeeded his uncle, Harvey Mann, in the axe business at Bellefonte, Pa., which business had been established by Harvey Mann and his father, William Mann, in 1825. He remained at Bellefonte until 1890, when he sold out to the American Axe & Tool Company. Since that time, except for a period of about two years, he has lived a retired life.

Mr. Mann was a man of unusually strong and unwavering views and of the highest integrity, commanding the respect of all who knew him. He was next to the oldest

past master of the Lewistown Lodge of Masons and a thirty-second degree member of the Pittsburg Consistory. He is survived by his widow, two sons and two daughters.

Letters from the Trade.

Our readers are invited to discuss in these columns questions of trade interest connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.

For an Association in New Jersey.

To the Editor: I crave the use of your valuable columns to raise the question, Why is there no retail Hardware association in the State of New Jersey? The steady growth of associations formed in other States would seem to demonstrate their beneficial influence in the trade. Indeed, many highly desirable reforms and achievements may be directly traced to the well directed efforts of these bodies and the National Retail Hardware Association, which has grown out of them. The bitterness of competition with ruthless price cutting has been mitigated, trade abuses have been corrected, menacing legislation has been forestalled and remedial and protective legislation furthered. New forms of competition have been aggressively met and important concessions from manufacturers have been secured which no amount of diverse individual effort could possibly have brought about. If the association movement could show no other fruit than the splendid economy of Hardware mutual fire insurance, that alone would give it a high place in the history of our trade.

THE PECULIAR CONDITIONS

In New Jersey are such as to increase the advantages usually attendant upon association. Owing to the close propinquity of towns and cities, especially in the eastern part of the State, trade divisions are very indistinct where they exist at all. Thus there are many evils of competition which might be corrected and credit abuses which might be stopped. Moreover, as we are so close to the metropolitan district and the Hardware manufacturing centers, much of our best trade is encouraged and solicited to buy direct. As individuals we submit to this injustice because we are not strong enough to raise a voice in protest. Associated, we could take such action as would readily convince offending manufacturers that their interests and ours were identical.

THE TIME IS RIPE,

the opportunity is before us. Shall we not unite to bury our differences and share in the benefits which organization has secured to Hardwaremen of other States in all sections of the country?

JERSEYMAN.

Examining Freight Bills.

Indorsing the points made in the article "A Hardware Merchant's Freight Account" in a recent issue a Pennsylvania merchant writes to the following effect:

To the Editor: The retailer should scrutinize all freight bills and also express charges. He should have a rate book of the express company of his town, weigh all packages received and see if the charges are correct. We have had experience in this line and find it is time well spent, as we frequently discover overcharges of from 5 to 25 cents on packages. The writer knows of instances where several shipments from California were overcharged \$15 a shipment.

PENNSYLVANIA.

Catalogue Houses and Special Brands.

To the Editor: What a busy time in the trade journals some of the trade—manufacturers, jobbers and retailers—are having with the catalogue houses and special brands. The catalogue houses will flourish until the retailer knows his business better and does things more thoroughly. Knowledge of business and everlasting application will in the end win out for him. Such a condition will come, is already well started, for in the village, town and city merchants are developing who are

away ahead of what their forefathers and fathers were. And special brands—how under the heavens can they ever be stopped? The actions of some manufacturers is driving small concerns into manufacturing and selling direct to consumers goods for which the manufacturers are charging dealers too much. The manufacturers are thus cutting off their own trade. We have in mind a contractor, a customer whose trade we had commanded for ten years. We lost him to a small manufacturer and he is buying now certain goods from that manufacturer lower than we can buy similar goods direct from the large manufacturer.

MERCHANT.

TRADE ITEMS.

THE NATIONAL MOTOR BOAT AND SPORTSMAN'S SHOW will open at Madison Square Garden, New York City, February 20, 1906, and continue up to and including March 8. This promises to be the greatest show of the kind ever held in this country, judging from the number of applicants for space, which include nearly all the old exhibitors and many new ones.

DUNHAM, CARRIGAN & HAYDEN COMPANY, San Francisco, Cal., is distributing an attractive souvenir in the shape of a flat paper weight bearing on each face the company's new "Clean Cut" trademark, a four-leaf clover design. This is set off by a bright color scheme and is said to be emblematic of the good will of the donors for the recipients.

HENRY F. FRASSE, until recently a director and officer of the Frasse Company, 38 Cortlandt street, New York, has resigned from that company and engaged with the Fairbanks Company, 416-422 Broome street, which will carry a full line of Stubs' Tools and Steel and Rollason Wire in addition to its regular and widely assorted lines of Factory, Railway and Mill Supplies.

THE salesmen of the Dupont Powder Company met in convention at the Claypool Hotel, Indianapolis, all of last week. Daily sessions were held at which papers were read and discussed bearing on the different departments of the company's business, some of the papers and their authors being: "Traffic Department," by Wm. Coyne; "The Trade Bureau System and the New Code," by G. H. Kerr; "Credits and Collections," by E. N. Wead; "Relation of Salesmen to Factory," by G. E. Potts; "Smokeless Small Arms Powder," by E. A. W. Everitt; "Promotion of Military Rifle Shooting," by Col. G. G. Ewing; "Use of Shotgun Powder," by J. T. Skelly. A banquet was held Thursday evening at which there were responses to toasts by Gen. T. C. Dupont, P. S. Dupont, H. M. Barksdale, H. F. Baldwin, Chas. L. Patterson and George Patterson.

JAMES L. NEEFUS, manufacturers' direct representative, has removed from 52 Dey street, New York, to larger quarters at 46 Dey street, occupying an entire floor, which enables him to carry in stock larger quantities and a greater variety of goods. A total of 17 manufacturers are represented by Mr. Neefus, their products including such goods as Twist Drills, Taps and Dies, Miter Boxes, Hoists, Link Chain and Sprockets, Spring Cotters and Keys, Shovels, Wheelbarrows, Nails, Emery Wheel Dressers, Dynamo Compound, Tool Grinders, Shafting, Pumps and Drop Hammers.

WILLARD L. HARVEY, Western representative of the Garland Nut & Rivet Company, 40 Dearborn street, Chicago, with a view to making the company and himself familiar to buyers of Rivets, Nuts, &c., sends out at intervals of about a month large illustrated postal cards which call attention effectively and entertainingly to the quality and scope of the company's products. Mr. Harvey, through an advertising man engaged for this work, besides these monthly cards, is constantly getting out something new and unique in the way of printed matter. He has compiled a list of about 1700 names, including Hardware jobbers and manufacturers using Rivets, Bolts and Nuts, to which this trade literature is sent.

S. W. Holman, West Alexandria, Ohio, has bought the Hardware business of S. P. Dininger.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made besides the brief reference to the catalogue or price-list in this column.

DETROIT SCREW WORKS, Detroit, Mich.: Illustrated catalogue and price-list of Milled Machine Screws, &c., with full page plates showing special work for which specifications are solicited.

CRANDALL CUTLERY COMPANY, Bradford, Pa.: Illustrated catalogue of Shears, Scissors, Pocket Knives, Razors, Razor Strops, Dog Collars, &c.

FABRIC FIRE HOSE COMPANY, 68 Murray street, New York: Catalogue illustrating and listing a comprehensive line of Fire Department Supplies; also Fire Engineers' Handbook, containing valuable information concerning Hydraulics, first aid to the injured, &c.

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo.: Catalogue, 128 large pages, with cover of holiday design, illustrating and listing Christmas goods. This book is issued with a view to putting the Hardware merchant in a position to secure Christmas trade.

KIRTLAND BROS. & Co., 90 Chambers street, New York: Catalogue of Sporting and Athletic Goods; also booklet entitled "A Friendly Talk About Shaving," referring to the Victor Safety Razor.

DIAMOND SAW & STAMPING WORKS, Buffalo, N. Y.: Circular referring to Sterling Hack Saws and Power Hack Saw Machines.

SOUTH BEND FOUNDRY COMPANY, South Bend, Ind.: Catalogue of Sewer and Water Castings, Inlets, Manholes, &c.; also catalogue of Hardware Specialties.

GILLETTE SALES COMPANY, Times Building, New York: Booklet entitled "The Pocket Barber Shop," referring to Gillette Safety Razors.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM **W. O. WRIGHT**, Durand, Ill., who has bought the Hardware, Stove and Paint and Oil business of E. C. Riegel.

FROM **L. W. LAIRD**, who has succeeded to the Hardware, Stove, Implement and Paint business of Laird Bros., Morland, Kan.

FROM **COCHRANE & DOHE**, Okeene, Okla., who have bought the business of the Okeene Hardware & Implement Company.

FROM **CORNELLIA HARDWARE COMPANY**, Cornelia, Ga., T. H. Little, formerly of Carnesville, Ga., proprietor.

FROM **MCCARTNEY BROS. COMPANY**, Ashland, Neb., which will take over the Hardware, Stove, Furnace, furniture, Saddlery and Sporting Goods business of J. C. Wright during the month of December.

FROM **M. A. FAIRCHILD**, who has opened a Hardware, Stove and Sporting Goods store at Eldorado, Neb.

THE PEABODY SUPPLY COMPANY, Peabody, Mass., has been incorporated in Massachusetts with capital stock of \$8000 to deal in Hardware and building materials. The officers are: President and treasurer, William H. Fellows; clerk, Nettie H. Fellows; directors, these officers and Horace P. Farnham.

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Parcels Post Campaign Getting Under Way.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, November 28, 1905.

PROMPTLY upon the convening of the new Congress on Monday, December 4, what promises to be the most active campaign for the authorization of a domestic parcels post and other collateral projects thus far undertaken will be set on foot. There will be new and important factors on both sides of the contest, and the Hardware trade should follow developments with the utmost vigilance and be prepared to co-operate with the opponents of these schemes from the moment they are launched.

The Henry Parcels Post Bill.

It is understood that the Henry bill for a domestic parcels post will be reintroduced during the first week of the new session and will at once be referred to the House Post Office Committee. Its provisions will be slightly modified, but the schedule of fees will remain the same, as follows:

On parcels not exceeding 3 ounces, 1 cent; on parcels over 3 ounces and not exceeding 6 ounces, 2 cents; on parcels over 6 ounces and not exceeding 9 ounces, 3 cents; on parcels over 9 ounces and not exceeding 12 ounces, 4 cents; on parcels over 12 ounces and not exceeding 1 pound, 5 cents; on parcels over 1 pound, 2 cents for each additional pound or fraction thereof. No parcel shall exceed in length $3\frac{1}{2}$ feet nor in length and girth combined 6 feet.

The Bill Will Also Provide

that packages may be registered and insured at the rate of 8 cents up to \$25 and 2 cents for each additional \$50. The bill will provide for the consolidation of third and fourth class matter, thereby bringing together printed matter of every description (except such as is mailed by publishers) and merchandise. This consolidation has been made to take advantage of the recommendation of the Third Assistant Postmaster-General, who has favored classifying printed matter and merchandise under a single rate of postage at 8 cents per pound and who is expected in his forthcoming annual report to repeat this suggestion.

National Grange a New Factor.

The most important reinforcement for the coming campaign received by the advocates of a domestic parcels post is an organization of farmers covering the entire country and known as the National Grange. This organization, while composed of many practical farmers, has had a hand in urging a great deal of legislation of no special interest to the farmer, and there has been much speculation here as to the source of the funds which it has disbursed from time to time. At the recent annual convention of the National Grange at Atlantic City an appropriation of \$10,000 was made "to be used as an educational fund for the dissemination of Grange policies," and it was announced that "this means that a determined, aggressive campaign for a Governmental parcels post will be commenced immediately." Ex-Governor N. J. Bachelder of New Hampshire was chosen master of the National Grange at this convention and he subsequently made the following statement with regard to the methods to be employed in advancing the parcels post crusade:

The establishment of a domestic parcels post, to my mind, is the issue that must be pushed. Every Granger in the United States within the coming year will be asked to demand from his Senators and Representatives in Congress a pledge that they will support a parcels post bill. The Legislative Committee of the National Grange will watch the bill closely, and no efforts will be spared to unmask all forms of opposition to this measure.

Curiously enough, it is stated that, following the appropriation of money to push the parcels post scheme, "strong utterances were made by the Committee on Resolutions in support of President Roosevelt's 'square deal' policy."

The Methods of the National Grange

are well understood in Washington. The organization is admitted to have a very large membership, which it supplies with petitions and memorials prepared by various

easily recognized duplicating processes and avalanches of these documents are sent down upon Congress at preconcerted intervals. In former times, when petitions and memorials were presented on the floor of the House during public sessions, the constant stream of such appeals on any given subject necessarily attracted much attention. Nowadays, however, the time of the House of Representatives is too precious to be wasted in the ceremony of formally receiving petitions and memorials and they are therefore dropped into a convenient box by members receiving them and afterward sorted and distributed to the proper committees.

Stereotyped Methods Should Be Avoided.

The result is that no one but members of the committees ever see more than a fraction of 1 per cent. of the documents that may reach Congress with regard to any given subject, and in the case of the committee members the effectiveness of the large number of petitions and memorials is apt to be completely offset by the disclosure of the fact that they are printed or mimeographed and evidently proceed from a common source. In striking contrast with this method of attempting to influence Congress is the direct, business-like practice of the members of the various Hardware associations, who write terse and forcible personal letters to their own members and Senators. A fair percentage of these letters are indorsed and introduced as memorials and thus find their way to the postal committees, thereby serving the double purpose of influencing individual Senators and Representatives and the committees having charge of the proposed legislation. It is of the utmost importance in campaigns of this character to avoid the use of stereotyped methods.

Travelers Getting in Line.

While the National Grange has resolved to take up the cudgel on behalf of a domestic parcels post the opponents of the project have also been reinforced. The traveling salesmen of the country, who are organized under the title of the Travelers' Protective Association of America, have decided to take an active part in the crusade against a project that would put a large percentage of them out of business. The association is divided into a large number of subsidiary "posts," the aggregate membership of which is claimed to be nearly 600,000. The association has organized a plan of campaign under which each post will appoint a member whose duty it will be to call the retail merchants of his town together to adopt resolutions against a parcels post, which will then be forwarded to the Senator and Representative in Congress from that district. The influence of retail merchants in all trades will thus be concentrated, and in place of receiving stereotyped printed petitions public men will have laid before them vigorously worded resolutions signed with the names of well-known business men, with many of whom they are personally acquainted.

Position of the Travelers' Association.

The Travelers' Protective Association maintains an organ known as the *T. P. A. Magazine*, which, under the title of the "Parcels Post Peril," has issued an appeal to the commercial travelers of the country to defeat the plans of the mail order houses to crush out competition. Following is an extract showing the position of the association and the character of the arguments it presents to its members:

We have not as yet been informed that any of the gigantic business houses in this country are conducted solely for philanthropic purposes. Every institution is looking for its profits. If a corporation consisting of a combination of brains and capital can secure privileges from the United States Government to allow them to use their most noteworthy department for the purpose of carrying their commodities to their customers at about one-half of the figure that is now in operation what will be the next step in the programme?

AN APPALLING TRAIL.

Any individual of the 600,000 traveling men in the United States can tell of at least one failure of a merchant of his trade within the past five years which is attributable directly to loss of trade caused by the mail order business. A proposition which admits so many failures within five years under existing conditions presents an aspect most appalling when confronted by a greater degree of price cutting on the part of the coterie of mail

order houses which have to depend on the failure of small concerns for their growth and development.

The country at large has been recently educated to the methods employed by trusts and monopolies. The rise of every gigantic combination has left in its wake an appalling trail of disaster and failures. When all is done, what is the result? The public at large, who have selfishly considered themselves the gainers by the fight for their patronage, as soon as the opposition is wiped out find that they have to year after year pay more and more for the very commodities which ought, in the regular law of supply and demand, to become cheaper.

What is to prevent this condition of affairs coming to pass if the trade of the small towns in the country is subverted from local channels into that of the coffers of the gigantic mail order houses?

IF THE MAIL ORDER HOUSES

can, on account of their ability to buy articles in 10,000 or 50,000 or 100,000 lots, as against the necessarily small bills sold to the country merchants, underbid these merchants and sell to their customers a generous percentage of their staple commodities, it all passing under the head of the time-tried axiom that "competition is the life of trade," we will admit the argument that it preserves a check on the alleged exorbitant prices charged by the small merchants.

But suppose that a greater opportunity for underselling these merchants is afforded by cheaper delivery. With a certain knowledge of ultimate success eradicating opposition the mail order houses can easily afford to underbid the small merchant at all points; consequently, his profits being entirely gone, it is only a question of time until his doors are closed. As the supply of goods sold by the jobbers to this class of trade decreases the expense account of the wholesaler must decrease, and the territory of each individual traveling salesman dries up more and more on this account, and the usefulness of this individual disappears. A wholesale house cannot exist without its trade among the retailers, and the next step is for them to close their doors.

A MONOPOLY.

With the retail dealer and the jobber out of existence, what then is the mail order proposition but a monopoly, and having the control of the entire retail country trade of the United States in their hands, the most logical conclusion is that a coalition will be formed for the purpose of doing away with competition with each other.

Post Check Currency Plan.

In addition to the fight for a parcels post the mail order houses are greatly interested in another scheme known as the Post check currency plan. This plan was devised by C. W. Post, a manufacturer of breakfast foods, doing business at Battle Creek, Mich. Mr. Post is a man of large means and he has established a bureau in this city, with several high salaried employees, whose business it is to advocate his project early and late, and especially to endeavor to popularize it through newspaper publications. Mr. Post spends a lot of money annually in this work and has patented a system of post checks which he has assigned to the Government and for which several years ago he secured an official indorsement. The success of his plan would simply mean the providing by the Government of a more convenient method of sending money away from home than is now supplied through the money order and registered letter systems of the postal service. While the Post check system is by no means as dangerous as the parcels post project, it is nevertheless a move toward a centralization and would undoubtedly injure the local retailer for the benefit of the big catalogue house.

W. L. C.

T. B. RAYL COMPANY'S ANNIVERSARY

THE T. B. RAYL COMPANY, Detroit, Mich., celebrated its thirtieth anniversary a short time since. T. B. Rayl and Dudley W. Smith went from Wooster, Ohio, to Detroit in 1875 and bought out the Hardware business of Arthur Glover, which has been continued ever since in the same location. In 1894 the business was incorporated and Alexander Paton taken into the company. If not the first, the Rayl Company was one of the first firms in the West to publish a catalogue of tools, and its business in this line we are advised extends all over the United States, with occasional orders from foreign countries. Two distinct catalogues are published, one of Woodworkers' Tools and one of Machinists' Tools and Factory Supplies. The anniversary was a very pleasant occasion, commencing with a supper to the employees and ending with a theater party. Fifty-six sat down to supper and speeches were made by the members of the firm and those of the employees who had been with them from ten to twenty-five years. Handsome silver loving cups were presented to Mr. Rayl and to Mr. Smith and a gold headed cane to Mr. Paton.

FACTORY COST AND BUSINESS METHODS.

COST SYSTEM OF THE BILLINGS & SPENCER COMPANY, HARTFORD, CONN.

In the second article of this series, which appeared in our issue of the 9th inst., the description of the system followed in the machine department of the company's plant was concluded, the plan of the foreman's office anteroom, showing course of workmen in going to or leaving work, being given, together with reproductions of workmen's weekly balance sheet, cost memorandum showing all items, cost card of machine department, compared costs card and machine repaired card.

Third Article.

In the Small Tool Department

of the company the system, while essentially the same in its basis of weekly time and job tickets, is of necessity varied in detail. A great variety of articles is manufactured many of them not standard, and in not a few in-

Working Time
OF
No. 26
This Side Out.

No. of Pieces Operated upon each day.	
M	
T	
W	503
T	
F	
S	
S	

Fig. 11.—Job Ticket Used on Piece Work.

M. Meyer
No. **26 D**
This Side Out

Co. Hrs.		PIECE WORK.	
		PIECES.	PRICE PER 100
M	9		
T	9		
W	11 1/2	503	20
T	9		
F	9		
S	9		
S			
TOTAL Co. Hrs.		49 1/2	

Fig. 12.—Weekly Time Ticket, Showing Hours of Work on Company's Time and Amount of Piece Work.

stances parts are interchangeable in more than one article or in more than one size of the same article. Much of the element of cost comes from other departments, being furnished by them, such as forging, hardening and polishing, the small tool department doing the finishing—in other words, the machine work—and the assembling. The record maintained is complete, in that it gives exact cost per piece of each of the operations performed, as well as cost of material and proportion of shop expense. But on a light Wrench, for example, where the total cost of manufacture is a few cents, the record does not go into such extreme details as is necessary where the article manufactured is a heavy machine.

The job tickets vary from those of the machine department on the reverse side only, the face being identical with the ticket already described, excepting that where the job is to be performed by the piece the words

Piece Work

appear at the top. The reverse side is shown in Fig. 11. There is a space for each day, in which the workman

enters the number of pieces he has produced. He is trusted in this, though there is, of course, a general oversight which would prevent any material cheating on the part of a dishonest employee. This record of number

material, to which is added the factor of shop expense for the department. This record appears on the card in total and in detail, to make it a complete record of the order, including details of material.

Average Card.

These details are transferred to the average card, shown in Fig. 15. This affords a comparison with all previous costs for the same job. Periodically an average of these costs is struck, so that a perfectly safe basis for

Form 400 B.

RECORD OF ORDER.

Order No. 1275 Dated Jan. 3, 1905.

Foreman Tonlinson Make Smith & Jones Mfg. Co.,

Article Finish 500 Special Wrenches as per

Specifications Blue Print D-685.

Rush!

ORDER RECEIVED. JAN 3 1905	ORDER IN WORKS. JAN 3 1905	ORDER COMPLETED. JAN 7 1905	COST RECORDED. JAN 9 1905
-------------------------------	-------------------------------	--------------------------------	------------------------------

DATE OF DELIVERY. *Ans. 1.7.05. 503 Kell.*

*Cost 14.0300
" 2.0420
" 8.0570
1290*

Fig. 13.—Card Issued as Order.

of pieces is maintained on jobs where work is done by the hour as well as where piece work is the rule.

One Weekly Ticket

serves for both piece work and day work. This ticket is the same on its face as that of the machine department, but the reverse side, shown in Fig. 12, is quite different, there being a column for the number of hours worked on the company's time—that is, by the hour—and columns for the number of pieces produced by the piece and the rate per 100 at which the workman is to be paid. The cards are stamped in and out just as in the machine department. Thus the face of the weekly time card contains a record of the hours in which the workman is in the

COST MEMORANDUM			
Article	<i>Special Munch</i>		
No. Pieces Ordered	<i>500</i>	No. Pieces Finished	<i>503</i>
Material Used	<i>10 Carbon Steel Per Lb. .02</i>		
Size	<i>7/8" D</i>	Length	<i>7 1/2"</i>
		Wgt.	<i>1 1/2 lbs</i>
Remarks	<i>Smith & Jones mfg Co.</i>		
Cost Material Ea.	<i>9300</i>		
" Labor Ea.	<i>8420</i>		
" Expense Ea.	<i>0570</i>		
Total Cost Each			<i>.1290</i>
DETAIL			
Operations	Cost Each	Total Cost Each	
<i>Material</i>	<i>0300</i>		
<i>Lo Forge</i>	<i>0150</i>		
• <i>Grind P.W.</i>	<i>0020</i>		
• <i>Grind P.W.</i>	<i>0040</i>		
• <i>Straighten</i>	<i>0020</i>		
• <i>Mill</i>	<i>0018</i>		
• <i>File & Burr</i>	<i>0060</i>		
• <i>Polish</i>	<i>0085</i>		
• <i>Case Hardening</i>	<i>0075</i>		
<i>Shop Expense</i>	<i>0570</i>		
<i>Cost Complete</i>		<i>.1290</i>	
<i>Lo Finish</i>			

Fig. 14.—Itemized Cost of Order.

shop, whether he is working by the hour or by the piece or both. The cost clerk of the department reckons the wages from the record of the reverse side, and, of course, he has the job tickets with which to make comparison.

An Order

comes from the main office for a lot of Wrenches, for example. The face of this order is shown in Fig. 13. A duplicate is made, the reverse side of which contains blanks for filling in the various items which entered into the cost of the article, as shown in Fig. 14. As the job goes through the works and is finished and delivered to the shipping room all data and memoranda, such as requisitions and job tickets, pertaining to it are filed under its order number until full material is at hand from which to foot the total cost per piece for labor and

Form 11.

Billings and Spencer Co. Average Card.

Article *Special French* Record No. *3965*
For *Smith & Jones Mfg. Co.*
Material *10 Carbon Steel* Size *7 1/8" L. 7 1/2" W. 1 1/2" H.* Price *.02*

Cost Returned 1.905

Date of Order	Order No.	Qty.	Cost Material	Cost Forging	Cost Finishing	Cost Packaging	Cost Handling	Cost All Labor	Cost Expense	Total Cost
<i>5.16.04</i>	<i>175</i>	<i>300</i>	<i>0325</i>	<i>0475</i>	<i>0180</i>	<i>0100</i>	<i>0025</i>	<i>0480</i>	<i>0655</i>	<i>1265</i>
<i>7.3.04</i>	<i>185</i>	<i>501</i>	<i>0295</i>	<i>0160</i>	<i>0185</i>	<i>0080</i>	<i>0025</i>	<i>0450</i>	<i>0610</i>	<i>1355</i>
<i>1.30.05</i>	<i>1275</i>	<i>503</i>	<i>0300</i>	<i>0160</i>	<i>0160</i>	<i>0035</i>	<i>0025</i>	<i>0420</i>	<i>0570</i>	<i>1290</i>

Fig. 15.—Average Card, Giving Basis for Figuring New York.

figuring new work is always at hand. The entries in the blanks for material, size, length, weight and price are made in pencil to permit of changes to correspond with detail of last order entered, that being nearest the exact type and present market price for material. This average card calls attention to the difference in cost of production of various orders, and also shows those departments in which cost is increased or saving gained.

Cost Card.

This is the general record. A more itemized statement of costs per part of each order is kept on the cost card.

[illegible]

Fig. 16.—Cost Card, Small Tool Department.

Fig. 16, which contains a record of cost of every part of the completed article. This is made up from a running account kept by the stock clerk. These cost cards are filed in the main office, in which the small tool department record differs from that of the machine department.

THE END.

In our issue of the 9th inst. a list of the principal Hardware associations of the country, including all of the State retail Hardware organizations, was given, together with the officers of each association. An error, however, occurred in the list of officers of the Pennsylvania Retail Hardware Association, the persons named having served during 1904. The present officers are George V. Thompson, Mount Jewett, president; J. H. Bowers, Charleroi, vice-president, and J. E. Digby, McKee's Rocks, secretary and treasurer.

quantity of goods in each drawer is entered on a slip of paper. The slips are put in their respective drawers and goods are deducted from them as sold.

Stock Book Sheets.

"Stock book sheets," a portion of one being illustrated in Fig. 2, are bound and numbered on sheet and stub in

in the safe. The shelf sheets are also checked in the same manner.

Consolidating Stock.

On the following Monday the consolidation of the stock is commenced, as shown in Fig. 2. All that appears on the sheets up to this time is the article and number and the quantities of goods in the retail stock. From the

															410
Article and No.	Flat Head Bolt Series C $\frac{1}{4}$														
Retfill Stock															
Wholesale Stock															
Reserve Stock															
Cost															
Total Stock															
	$\frac{3}{8}$	0	1	2	3	4	5	6	7	8	$\frac{1}{2}$	1	2	3	4
	910	2	3	3	1	3	3 $\frac{1}{2}$	1	1 $\frac{1}{2}$	$\frac{1}{2}$		4	1 $\frac{1}{2}$	1	$\frac{3}{4}$
		39	6	900	38	360	14	31	24	27		38	465	365	384
		1099	2456	275	595	40	2034	870	342	119 $\frac{1}{2}$		70	336	467	545
	$87\frac{1}{2}-10-2$	72	72	72	72	72	75	78	82	88		72	72	72	75
	910	1140	2465	1178	634	403	2053	902	367 $\frac{1}{2}$	147		112	802 $\frac{1}{2}$	823	920 $\frac{1}{2}$
		5	6	7	8	9		$\frac{5}{8}$	2	3	4	5	6	7	8
	910	$\frac{1}{2}$	13 $\frac{1}{2}$	24 $\frac{3}{4}$	16	4 $\frac{3}{4}$			39	4 $\frac{1}{2}$	12 $\frac{1}{2}$	18	13 $\frac{1}{2}$	13	7
		666	180	189	156	56			60	145	75	556	152	70	22
		360		200							600	800	600	600	200
	$87\frac{1}{2}-10-2$	78	82	84	90	96			72	72	75	78	82	86	92
	910	1026	1735	410 $\frac{1}{2}$	172	600 $\frac{1}{2}$			99	149 $\frac{1}{2}$	687 $\frac{1}{2}$	1374	765 $\frac{1}{2}$	683	229

Fig. 2.—Stock Book Sheets, 12 x 17 Inches in Size, the Final and Permanent Stock Record.

the same manner as the "shelf sheets," except that they are perforated on the side instead of at the top, for detaching when outlined. The sheets are 12 x 17 inches in size. They are "outlined" in ink from the retail price-books on the counters, as these represent the entire stock carried. All the foregoing preparatory work is done

shelf sheets of the different floors and warehouses the heads of departments call off the quantities of goods to members of the office force, who enter them on the appropriate lines. Several sets of men do this work at the same time. The headings at the left of the ruled lines on the sheet shown in Fig. 2 represent the order in which

DATES FIXED FOR STOCK TAKING.			
Stock all taken by	Dec. 26th)	
Consolidating Stock	Dec. 28th- Jan. 7th	)	Mr. A.
Adding of prices	Jan. 7th - 25	)	Mr. B.
Figuring Stock &)	
Re-Figuring Stock	Jan. 11th-Feb. 15th	)	Mr. C.

Fig. 3.—A Card of the Dates Fixed for Stock Taking, 4 x 6 Inches in Size, Arranged by the Superintendent.

previous to the night of stock taking without interfering with business.

Writing Retail Stock.

Commencing at 7 p.m. on the night of stock taking the retail stock is written on the outlined sheets. To expedite the work three to five men from each department, representing several sections of shelving, call off the goods and the same number of men enter them on the outlined stock book sheets. This work is completed in about two and one-half hours. The stock book sheets are then assembled and are checked up by the superintendent to see that none are missing; then they are put

the stock is consolidated in the spaces between each of the double rulings, it being considered unnecessary to have these headings repeated down the entire page. As the heads of the departments are calling off the quantities of goods anything that appears like an error is investigated and corrected if necessary. Thus all the various kinds of stocks from all parts of the establishment are brought together on the final and permanent record.

Pricing and Figuring.

After the stock sheets are consolidated additions of quantities are made by the office force. The sheets are

then turned over to the buying department, where prices are inserted and footings made. Discounts are put in the first column to the left and the extensions in the last columns to the right. The quantity of goods is entered in pencil, the prices in black ink and the total amounts in red ink. The consolidated sheets are finally bound in book form, on the back of which, in gilt, is the word "Stock," the year and the initials of the firm.

The Superintendent's Memorandum.

A card, 4 x 6 inches in size, shown in Fig. 3, is made out each year and preserved by the superintendent so that he can see if improvements in time or method can be made in inventory work from year to year. Improvements in detail are made almost every year, although they make but slight modifications in the system.

PALACE HARDWARE COMPANY'S INVENTORY SYSTEM.

THE annual inventory of the Palace Hardware Company, San Francisco, Cal., is taken in the night. Daily business proceeds without interruption and the regular force is not interfered with in the performance of its routine duties. Two or three teams of four men each are employed in taking the inventory, each having an experienced stock clerk as leader, but otherwise made up of hands hired temporarily for this purpose.

Work Is Begun

on the night of January 2 and continues from 7 p.m. to 6 a.m., with a time allowance at midnight for rest and a square meal. From eight to ten nights are usually required to finish the job. Nothing in the way of preliminary arrangement is necessary, as all goods carried are carefully classified and always kept in order. Inventory sheets are not given out to the crews, but the stock is written up on

Tally Cards,

one of which is illustrated in Fig. 1. These are freely distributed among the goods in the different departments and are marked, "Do not destroy this tag under any circumstances and use only in the department indicated."

are numbered, keeping each department carefully segregated,

Priced, Figured and Filed

numerically in a permanent binder. Goods which have declined since purchase are priced at shrinkage value, not

STOCK TAG

MAIN FLOOR. NO. 1793

Joist Hangers

800 No 3 2 X 12

1000 2 X 14

849 3 X 12

3149 3 X 14

360 6 X 16

373 6 X 18

Instances, and USE ONLY in the Department Designated.

Fig. 1.—Portion of Tally Card, Palace Hardware Company. Actual Size, 4 x 10 Inches.

at ordinary cost. Advances occurring within the year are ignored as they prove oftentimes to be only temporary. Unsalable goods are not priced at all, but are marked to

Inventory				Sheet No. 1164			
Floor Basement				Location Annex			
	QUANTITY	ARTICLE	NUMBER	SIZE	PRICE	EXTENSIONS	
○	800	Joist Hangers	3	2 X 12	28 1/2	22 1/2	
	1000	"		2 X 14	26	26 00	
	849	"		3 X 12	42	35 56 1/2	
	3149	"		3 X 14	43	135 46 07	
	360	"		6 X 16	1 08	37 9	
	373	"		6 X 18	1 15	412 95	
			40%			181 14 62	
							186 87
	15 1/2	Red Oak	117 X 7 1/2 X 2	129	11 1/2	17 1/2	1 67 1/2
	21 1/2		22 X 10	10	78		1 81 1/2
	20			6 1/2	1 00		1 20
TOTAL OF SHEET							234 27 1/2

Fig. 2.—Portion of Inventory Sheet, Palace Hardware Company. Actual Size, 9 1/2 x 11 1/2 Inches.

Every morning they are turned in at the office and passed to clerks who transcribe all items onto the permanent inventory sheets, as shown in Fig. 2; afterward the tally cards are filed until of no further possible use and then destroyed. As fast as the final sheets are written up they

be sold for old junk or pot metal at the earliest opportunity.

Salesmen in the store are kept posted daily as to the progress of the night crews, and until stock taking is over they are required when recording a sale to mark it

"Taken" or "Stock," the latter indicating those items which should be added to the inventory at the finish.

** the back of the binder in which all sheets are assembled blank pages are reserved with the lines numbered to correspond with the different sheets. Here the footings are brought forward and arranged, making it easy to determine the total of each department as well as the grand total of the inventory.

INVENTORY BLANKS USED BY JONES HARDWARE COMPANY.

THE JONES HARDWARE COMPANY, Richmond, Ind., uses special loose leaf blanks for taking inventory which are ruled and printed to its order, as shown in the accompanying illustration. As the Hardware and Implement departments of the company occupy different buildings, a distinction is made in the color of the blanks, white being used for the former and yellow for the latter. All sheets are numbered before given out,

8½ inches wide, which can be bought by the quire from any stationer. This is sewed into 20 books of about 25 pages each, all being numbered in one series from 1 to 500. The crews into which the working force is divided are each furnished with different books, which are replaced with new ones when filled. Books containing the stock of certain floors or sections are kept separate and when footed show the value of the goods in the departments covered. In practice it is found that 25-page books are more easily kept track of than loose sheets and can be more conveniently distributed for the purpose of pricing or figuring. After they are all priced, extended, footed and examined they can either be bound into one book or wrapped up and put away.

Peirson Hardware Company, Pittsfield, Mass., also employs a series of booklets in stock taking, sewing six sheets of journal paper, which makes 24 pages, into a wrapping paper cover. All books for a given year are eventually bound into one volume, but for the sake of convenience in comparison and handling this is not done

Date <i>January 1st 05</i> Department <i>Hardware 1st floor</i> Sheet No. <i>663</i>		Called <i>Markley</i> Entered <i>Stuck</i> Priced <i>McQuinn</i> Calculated <i>McQuinn</i> Verified <i>P.B.</i>					
FROM		STOCK NO.	QUANTITY	PRICE	EXTENSION	TOTAL	
<i>McQuinn</i>	<i>Heavy Strap Hinges</i>	<i>6"</i>	<i>690*</i>	<i>15</i>	<i>10350</i>		
<i>McQuinn</i>	<i>"</i>	<i>10-16"</i>	<i>1360*</i>	<i>13</i>	<i>17680</i>		
					<i>28030</i>		
	<i>Less 75-10-10-10%</i>						<i>5111</i>
<i>Oliver</i>	<i>Screw & Strap Hinges</i>	<i>6-12"</i>	<i>950*</i>	<i>275</i>	<i>26125</i>		
<i>Oliver</i>	<i>"</i>	<i>14-20"</i>	<i>1460*</i>	<i>260</i>	<i>37960</i>	<i>64085</i>	
<i>Peirson</i>	<i>Steel Ranges</i>	<i>6879S</i>	<i>3</i>	<i>4600</i>	<i>13800</i>		
	<i>"</i>	<i>817A</i>	<i>4</i>	<i>4500</i>	<i>18000</i>		
	<i>"</i>	<i>821A</i>	<i>2</i>	<i>3800</i>	<i>7600</i>		
	<i>"</i>	<i>817N</i>	<i>3</i>	<i>2700</i>	<i>8100</i>		
	<i>"</i>	<i>6817</i>	<i>4</i>	<i>3300</i>	<i>13200</i>		
	<i>"</i>	<i>518S</i>	<i>1</i>		<i>5600</i>	<i>65000</i>	
<i>Peirson</i>	<i>Steel Ranges</i>	<i>8918S</i>	<i>1</i>		<i>3217</i>		
	<i>"</i>	<i>1847</i>	<i>3</i>	<i>2750</i>	<i>8250</i>		
	<i>"</i>	<i>1624</i>	<i>4</i>	<i>2550</i>	<i>10200</i>		
	<i>"</i>	<i>1462</i>	<i>2</i>	<i>2350</i>	<i>4700</i>	<i>26367</i>	

Portion of Inventory Sheet, Jones Hardware Company, Hardware Department.—Actual Size, 11 x 14 Inches.

and after being written up by the heads of the different departments are returned to the office where the calculation is done. A numerical comparison is first made to be sure that none are missing and afterward they are arranged systematically as to lines of goods, &c. An index showing the consecutive arrangement is then made which is filed with the sheets in a loose leaf cover.

NOTES ON INVENTORY METHODS.

In taking inventory it is of the utmost importance to avoid showing any erroneous profits or losses. These are likely to be thrown out of all proportion unless the most rigid rules of pricing are adhered to. Many wise merchants add nothing whatever to represent freight paid or other expenses incurred on goods, figuring them at the minimum market price whether they cost more or less. Damaged or unsalable stock should be gotten rid of at once, either marked down till it will move, sold for junk or given away. No wideawake concern should waste its good storage room on such accumulations nor should it incur the useless expense of repeated overhauls.

Tracy, Robinson & Williams Company, Hartford, Conn., writes up its inventory in a series of small books made of ordinary journal paper, about 14 inches long by

until two or three years have expired. After the inventory has been written the booklets are numbered consecutively and conspicuously labeled on the wrapping paper covers to show the line of goods contained and their location on the premises. The covers are also bound into the regular volume because their distinctive color affords means of promptly locating any particular line of goods which it is desired to refer to.

SARGENT & Co., 149-153 Leonard street, New York, have been compelled largely to increase their facilities, having in addition to the entire building already occupied taken the street floor of what was the Hanan Building, on the northeast corner of Leonard and Centre streets. By cutting through the rear wall of the latter building they have obtained a connected space fronting on Centre street about 25 x 100 feet, which after May 1 next will be doubled by obtaining possession of the adjoining floor, now otherwise occupied. The new floors will be adapted for the use of the city department, now in charge of its former manager, Fred L. Stellwagen, thereby giving a better opportunity for the display of samples, facilitating city deliveries and securing frontage on a main thoroughfare. In connection with fine Builders' Hardware the house now has in hand and in process of instal-

lation orders for many important structures, including hotels, theaters, post offices, railroad terminals, hospitals, Government buildings, clubs, churches and general office buildings scattered over the larger portion of the United States.

JAMES PENDER & CO.'S PLANT.

JAMES PENDER & CO., LIMITED, St. John, N. B., have recently made a number of important additions to their plant, including machine and cooper shop, 30 x 66 feet, two stories; wire straightening and storage building, 42 x 50 feet, two stories; wire mill, 60 x 100 feet; cleaning room, 47 x 74 feet; wire rod warehouse, 60 x 62 feet; boiler and engine rooms and coal shed. The company has a plot of ground about two acres in extent, fronting on the harbor and about 100 yards from the I. C. R. freight terminus. About three-quarters of this ground is now covered with buildings, the balance being reserved for extensions. A switch has been arranged for to run alongside the Rod warehouse.

The engines and boilers for the plant were furnished by the Goldie & McCulloch Company, Galt, Ont. The lighting plant is direct connected, the generator being of the Canadian General Electric Company's make. The heating of the new portion of the plant is done by the Buffalo Forge Company's hot air system, the old being heated by steam pipes. The Wire Benches and Baker were furnished by Turner, Vaughn & Taylor Company, Cuyahoga Falls, Ohio, and are of the latest and most improved design. A rope drive of special design will be used. The machinery will be moved out of the present Wire mill and replaced with Wire Nail machines. The capacity of the new plant in ten hours will be 25 tons of Wire and 20 tons of Nails. The capacity for Cut Wire and Cut Rods will be about double what it is at present. It is also the purpose of the company next year to increase its output in Toe Calks to about five tons a week.

The Nail warehouse is capable of storing 20,000 kegs and has a driveway through the center, the Nails being loaded from either side. In setting up Nail kegs the company will use Wire Hoops, electrically welded and made on the premises. The capacity in this line will also probably be increased.

The company states that it has just completed the development of a new Horse Nail hot forging process and will be ready to make Nails by the end of the year, when it will have a capacity in this line of four to five tons per week. The machines are automatic and have a capacity of from 100 to 120 Nails per minute, according to size. A new finishing machine will also be completed this year, which will enable the company to make pointed Nails.

STAR ENAMELING AND STAMPING COMPANY.

THE STAR ENAMELING & STAMPING COMPANY, Pittsburgh, Pa., manufacturer of Enameled Ware, Dinner Pails, Japanned Goods, Wash Boilers, &c., whose present works are located on Washington avenue, Allegheny, has bought a site of over 5 acres on Chartiers avenue, McKees Rocks, Pittsburgh, having thereon five buildings, one being a two-story brick building 85 x 225 feet, another a steel frame building 85 x 130 feet and a third a steel frame building 33 x 130 feet, also a brick building 38 x 44 feet and a brick engine house 36 x 44 feet, together with complete power plant, light plant, heating and other equipment. The company is at present erecting an additional two-story steel building 75 x 150 feet, which is being especially designed for the enameling branch of its business. The company is also building a number of furnaces and making other extensive improvements at a total cost of about \$40,000. All of the improvements are well under way and when completed the plant will be one of the largest and most modern in the country in its line of manufactures. The company states that it is making important additions to its line of products, consisting of Berlin Shapes, Dish Pans, Rinsing Pans, Water Buckets, Chamber Pails, Cuspidors and other items. The new site is one of the best located in the Pittsburgh district, three lines of street cars passing

the works, which are only 15 minutes' ride from the business center. The plant will have direct switching connections with the Pennsylvania Railroad, the Pittsburgh & Lake Erie and the Pittsburgh, Chartiers Youghieny Railroad. The officials of the company are C. E. Christman, president; Henry Rosser, treasurer, and George W. Rowbottom, Jr., secretary.

MISCELLANEOUS NOTES.

United States Stamping Company.

United States Stamping Company, Moundsville, W. Va., has added a number of shapes to its line of enameled steel ware, the entire line being shown in the company's catalogue, No. 3, embracing Royal Blue, Azure and Green exteriors. The white lining is referred to as acid proof, and the shapes as liberal in size and up to date as to patterns and trimmings. The goods are triple coated, and will not absorb fruit acids or grease. The company also lists a full line of sheet iron dripping pans.

Wallingford Mfg. Company.

Wallingford Mfg. Company, Wallingford, Vt., John H. Graham & Co., 113 Chambers street, New York, direct representatives, has recently markedly increased its product by the addition of a large and comprehensive line of hand farming and garden tools. In Catalogue C, just issued, 38 of the 48 pages illustrate and describe forks in great variety, and three grades for hay, barley, manure, spading and the handling of many cereals. There are also hoes for garden or field, mortar and riveted hoes, weeders, scuffle hoes, steel and malleable garden rakes, potato, manure and clam hooks and coke, stone and ballast forks. The Cut Easy grass hook is a new one in a large assortment. Other goods shown are corn hooks, hay knives, corn knives, corn brakes and corn huskers. The steel goods are branded Wallingford, Green Mountain and Eureka, according to quality.

Cyclone Dish and Vegetable Washer.

The dish washing machine shown in the accompanying illustration is manufactured by Z. S. & C. L. Randleman, Des Moines, Iowa. It is made of galvanized metal and is described as simple in mechanism and very durable. A water beater in the center of the tub is geared to revolve several times with one turn of the crank. This gives it great speed, throwing hot water with such force



Cyclone Dish and Vegetable Washer.

among the dishes as to remove egg, grease or any other substance that adheres to them in a very short time. The dishes are not rotated and are protected from the beater by a wire rack, so that there is said to be no danger of breaking. The machine is also recommended for washing vegetables. It is offered in four sizes, ranging from the small family size to one which is suitable for hotels and restaurants.

The Wallace Barnes Company, Bristol, Conn., is now making a specialty of hardened and tempered steel washers and states that it has a very large variety of dies from which almost any shape can be made.

Stamped Frame Barrel Bolt.

The frame and keeper of the barrel bolt shown in the accompanying illustration are each stamped from one piece of metal. The edges are slightly embossed to improve the appearance and to strengthen the frame. The bolt is furnished in the usual hardware fin-



Stamped Frame Barrel Bolt.

ishes and also in Japan. It is being brought out by the Shelby Spring Hinge Company, Shelby, Ohio.

Fox's Gauge Square.

Wiebusch & Hilger, Limited, 9-15 Murray street, New York, sole agents for the Challenge Cutlery Corporation, Bridgeport, Conn., have just brought out Fox's all steel patent try square, with Wiatt's patent gauge edge on the inner surface of the blade, as illustrated herewith. The square is pressed from sheet steel, polished and nickel plated, and is made by special machinery intended to give absolute accuracy. When used as a gauge the point



Fox's Gauge Square.

of a pencil or scratch awl is inserted in the indentation, giving the width to be measured. The square is then drawn along the material, using its head as a guide, the pencil or awl being guided by the indentation in marking the measured line. The points of the indentations forming the gauge are at regular distances under the $\frac{1}{4}$ -inch divisions. The tool can be used both as a try square and as a carpenter's gauge and thus takes the place of two tools. The indentations do not in any way prevent the inner edge of the blade being used for a try square when the gauge feature is not wanted. The tool will be made at first only with blades 6 inches in length.

Triple Screw Driver No. 7501.

The James Swan Company, Seymour, Conn., Russell & Erwin Mfg. Company, 43-47 Chambers street, New York, sole agent, is offering the triple screw driver shown



The Triple Screw Driver No. 7501.

herewith. It is designed for automobile and machinists' use. The side blades allow additional leverage in setting and taking out screws and also permit taking out or inserting screws very close to or underneath projections.

The tool is made with the following sized blades: 5-16 x 4 inch, $\frac{3}{8}$ x 5 inch and 7-16 x 5 inch.

Hatchetaxe.

Findlay Axe & Tool Company, Findlay, Ohio, the entire product of which is, with slight exceptions, mar-

keted by Wiebusch & Hilger, 9-15 Murray street, New York, has recently patented and is now offering the Hatchetaxe, as here illustrated. The Dadz finish, shown, is made in weights $1\frac{1}{2}$ to $4\frac{1}{2}$ pounds each in seven sizes, Nos. 1 to 7, inclusive, and is designed especially for a household tool. The company claim that this tool cannot be broken under the eye, a hatchet's usual weak point, this design providing more metal around the handle than is customary. The eye thus being longer holds the handle more firmly. The driving surface is a safe distance from the claw. The head is hardened, so that the tool is also suitable for nail and spike driving. All sizes have a claw on the head, thereby combining cutting, driving and drawing qualities. The beveled bit is particularly serviceable



Hatchetaxe.

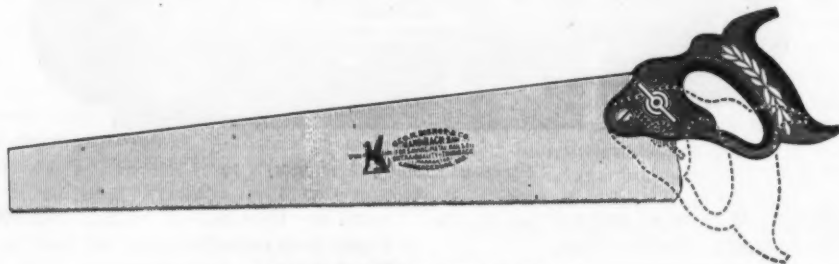
for splitting wood, and, in consequence of the straight bevel bit, is easily sharpened. Both head and blade are tempered, the blade being refined by hand hammering. The Dadz Hatchetaxe has a red poll, black blade and polished bevels. It is also made in what is called Radium finish, having a red poll and gold bronze and polished blade, there being four sizes, Nos. 1 to 4, weighing, respectively, $1\frac{1}{2}$, $1\frac{3}{4}$, $2\frac{1}{4}$ and $2\frac{3}{4}$ pounds.

THE KEISER MFG. COMPANY, Reading, Pa., of which D. H. Keiser, formerly general manager of the Wilkinson Shear & Cutlery Company of that city is the principal owner, was recently formed for the purpose of manufacturing high grade sheep and grass shears as well as other cutting tools of that description. A new plant has been erected containing some 6000 square feet of floor space. Nearly all of the machinery required has been installed, while the remainder has already been purchased, and it is expected that shears will be ready for delivery during the present week.

The Handy Handle Hand Hack Saw.

Illustrated herewith is a new article offered to the trade by Geo. H. Bishop & Co., Cincinnati, Ohio, and Lawrenceburg, Ind., intended for use as a hack saw for almost any purpose, such as sawing metal, nails, wood, &c. The manufacturers refer to it as a tool that will prove especially useful in remodeling work and in places where nails are numerous and ruinous to all tools not adapted to cutting them. In wood it makes a perfectly

being no place for lodgment of dirt. The labor on it is all press work, so that the rack can be furnished for about the same price as a wooden rack, which is always a source of anxiety on account of fire. Racks are made to any special size and when necessary for holding small work the shelves are covered with sheet iron. The separate pieces are punched for locking together, so that when the rack is shipped it is knocked down and all pieces marked how to go together. Excepting for a few bolts to join the main frame, a man's two hands, with

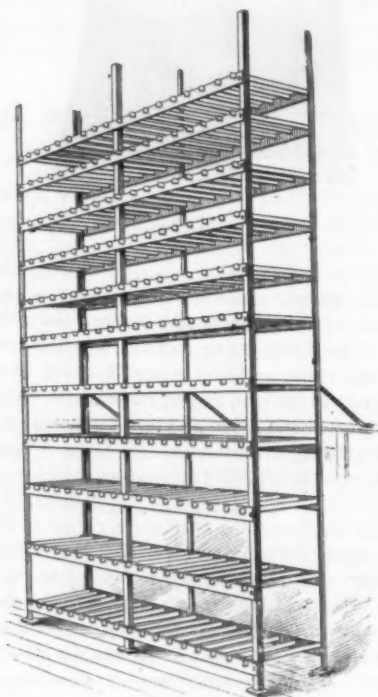


The Handy Handle Hand Hack Saw.

smooth cut, suitable for finishing and tight fitting work, the blade being made of especially tough steel, toothed and tempered to suit the purpose of sawing metals and nails without injury to the teeth, and can be resharpened the same as any ordinary wood saw. The manner of fastening the adjustable handle in position, which adds greatly to the usefulness of the tool, is patented. It can be swung out of the way to suit any pitch of the blade required for the work in hand. The trimmings are of nickel. The manufacturers have sent us photographs, one of which shows a piece of gray iron casting 1 inch thick by 3 inches wide that was partially sawed through by one of these saws, taken direct from stock, without in the slightest degree marring its appearance or injuring it in any way. Another photograph shows a piece of hard maple wood with nails driven into its end and the latter sawed off, showing the straight line cut made. The saws are made in 16, 18, 20, 22 and 24 inch lengths, packed one-third of a dozen in a box.

Steel Rack.

Herewith is shown a new all steel rack made by F. E. Wells & Son Company, Greenfield, Mass. Being of all



Steel Rack.

steel it is absolutely fire proof and so is very desirable for use in a stockroom. It can be set in front of windows without shutting out the light, and is always clean, there

perhaps a hammer now and then, are all the tools necessary to assemble it.

Pullman Folding Coat Hanger.

Pullman Mfg. Company, Rochester, N. Y., manufacturer of Hardware specialties, is just putting on the market a new folding coat hanger which is illustrated



Fig. 1.—Pullman Folding Coat Hanger with Trousers Hanger Attached.

herewith. It is made of best grade cold rolled Bessemer steel stock, with heavy coats of copper and nickel plate, and is highly polished. The retail price is 15 cents. Besides being designed for coats and waists it has an eye

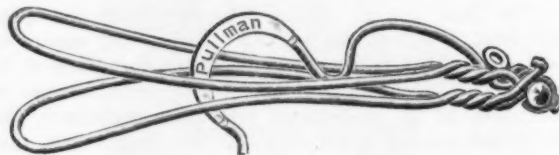


Fig. 2.—Pullman Coat Hanger, Folded.

to receive a Pullman trousers or skirt hanger, as shown in Fig. 1, making a combination hanger which will hold a whole suit at the popular price of 25 cents. In Fig. 2



Fig. 3.—Pullman Folding Coat Hangers, in Display Box.

is shown the hanger folded for packing in trunk or grip, while Fig. 3 shows the neat display box in which it is put up for the trade.

Pike's Stonoil.

Pike Mfg. Company, Pike, N. H., is offering to the trade an oil which it considers ideal for use on oilstones, hones or other abrasive surfaces. It is marketed under the name of Pike's Stonoil and is said to have been perfected after many years of experimenting with various combinations of lubricants. It is described as absolutely free from acid, so that it will not corrode or harden stones, and also free from vegetable matter, which would make it become gummy and cause the stones to glaze. Although thin enough to flow freely, it has sufficient body to float off heavy steel cuttings. Stonoil is said to be adapted for cleaning all finished wood or metal surfaces and an excellent oil for guns, sewing machines, razor strops, clippers, clocks, locks and other articles requiring a lubricant or preservative. It is put up in two sizes:



Pike's Stonoil.

6-ounce bottles with nickel screw caps, as illustrated, retailing at 25 cents, and 2-ounce plain bottles, which retail at 10 cents.

Samson Railway Car Mover.

G. D. Rowell & Son, Appleton, Wis., are manufacturing the Samson railway car mover shown in the accompanying cut. While this has been on the market for some time and is now in use on many important railroads, several valuable improvements have been made in it during the past year. These include a strengthening throughout and the change from a triangular to a square

spur. The spur and spring are held in place by a patent clamping device, enabling the spur to be taken out and changed from a dull to a sharp edge or replaced with a new spur very readily. The spring, which slides on the



Samson Railway Car Mover.

rail, is also patented and is an important feature in preventing wear on the spur and assisting the operator by releasing the spur and giving the mover free opportunity to slide forward on the rail. Besides the railway car mover the company also makes what is termed a locomotive railway car mover, which is an exact duplicate of the one illustrated, except that it is stronger, heavier and longer and expressly adapted to handling extra heavy freight cars and locomotives.

Schroeder Bros. Hardware Company, 809 and 811 North Fourth street, St. Louis, Mo., is manufacturing a varied line of graters for use in connection with horseradish, potatoes, cocoanut, cheese, crackers, bread, turnips, carrots, &c. Two sizes are made—No. 500, hotel size, with triple motion, and No. 250, family size, with single motion. The graters are said to operate with especial rapidity, while the grated material is referred to as light, short and flaky, a desirable quality, particularly in the case of horseradish and potatoes when used for potato pancakes.

PAINTS, OILS AND COLORS**Animal, Fish and Vegetable Oils—**

Linseed, City, raw.....	40	@ 41
Linseed, City, Boiled.....	41	@ 42
Linseed, State and West'n, raw.....	37	@ 38
Linseed, raw Calcutta seed.....	61	@ 62
Lard, Extra Prime, Winter.....	61	@ 62
Lard, Extra No. 1.....	47	@ 48
Lard, No. 1.....	36	@ 37
Cotton-seed, Crude, f.o.b. mills.....	24	@ 25
Cotton-seed, Summer Yellow, Prime.....	27	@ 28
Cotton-seed, Summer Yellow, off grades.....	25	@ 26
Sperm, Crude.....	50	@ 52
Sperm, Natural Spring.....	51	@ 52
Sperm, Bleached Spring.....	51	@ 52
Sperm, Natural Winter.....	60	@ 62
Sperm, Bleached Winter.....	63	@ 65
Tallow, Prime.....	51	@ 52
Whale, Crude.....	42	@ 44
Whale, Natural Winter.....	42	@ 44
Whale, Bleached Winter.....	44	@ 46
Menhaden, Brown, Strained.....	27	@ 28
Menhaden, Light, Strained.....	28	@ 29
Menhaden, Bleached, Winter.....	30	@ 31
Menhaden, Ex-Bld., Winter.....	31	@ 32
Menhaden, Southern.....	16	@ 18
Cocunut, Ceylon.....	10	@ 12
Cocunut, Cochiti.....	8	@ 9
Cod, Domestic, Prime.....	34	@ 35
Cod, Newfoundland.....	38	@ 40
Cod, Elaine.....	30	@ 31
Red, Saponified.....	44	@ 46
Olive, Italian, bbls.....	60	@ 67
Neatsfoot, prime.....	49	@ 50
Palin, Logos.....	10	@ 12

Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	10	@ 11
Black, 29 gravity, 15 cold test.....	11	@ 12
Black, Summer.....	13	@ 14
Cylinder, light filtered.....	18	@ 19
Cylinder, dark filtered.....	16	@ 17
Paraffine, 903-907 gravity.....	12	@ 13
Paraffine, 903 gravity.....	11	@ 12
Paraffine, 863 gravity.....	9	@ 10
Paraffine, Red.....	11	@ 13
In small lots 1/4¢ advance.		

Miscellaneous—

Barytes, White, Foreign.....	17.50	@ 19.00
Barytes, Amer. floated.....	18.00	@ 19.00
Barytes, off color, No. 2.....	13.50	@ 15.00
Chalk, in bulk.....	3.00	@ 3.25
Chalk, in bbls.....	100	@ 110
China Clay, English.....	11.00	@ 12.00
Cobalt, Oxide.....	2.50	@ 2.60
Whiting, Common.....	100	@ 110
Whiting, Gilders.....	100	@ 110
Whiting, Ex. Gilders.....	100	@ 110

Putty, Commercial—

In bladders.....	1.65	@ 1.85
In bbls. or tubs.....	1.15	@ 1.35
In 1 lb to 5 lb cans.....	2.60	@ 2.90
In 12 1/2 to 50 lb cans.....	1.45	@ 1.85

Spirits Turpentine—

In Oil bbls.....	63	@ 64
In machine bbls.....	64	@ 64 1/2

Glue—

Cabinet.....	11	@ 15
Common Bone.....	7	@ 9
Extra White.....	18	@ 24
Foot Stock, White.....	11	@ 14
Foot Stock, Brown.....	8	@ 11
German Hide.....	12	@ 18
French.....	10	@ 16
Irish.....	13	@ 20
Low Grade.....	9	@ 12
Medium White.....	14	@ 17

Gum Shellac—

Bleached Commercial.....	38	@ 40
Bone Dried.....	48	@ 49
Buttton.....	40	@ 45
Diamond I.....	55	@ 57
Fine Orange.....	45	@ 47
A. C. Garnet.....	45	@ 45
D. C.....	60	@ 60
Octagon B.....	42	@ 43
P. N.....	41	@ 42
V. S. O.....	58	@ 58

Colors in Oil—

Black, Lampblack.....	12	@ 14
Blue, Chinese.....	36	@ 46
Blue, Prussian.....	32	@ 36

Blue, Ultramarine.....	13	@ 15
Brown, Vandyke.....	11	@ 14
Green, Chrome.....	10	@ 15
Green, Paris.....	12	@ 15
Sienna, Raw.....	12	@ 15
Sienna, Burnt.....	12	@ 15
Umber, Raw.....	11	@ 14
Umber, Burnt.....	11	@ 14

White Lead, Zinc, &c.—

Lead, English white, in Oil.....	8 1/2	@ 9 1/2
Lead, American white, in Oil:		
Lots of 500 lb or over.....	7	@ 7
Lots less than 500 lb.....	7 1/2	@ 7 1/2
In Barrels.....	6 1/2	@ 6 1/2
Lead, White, in oil, 25 lb tin pails, add to keg price.....	1	@ 1
Lead, White, in oil, 1 to 5 lb pails, add to keg price.....	1 1/2	@ 1 1/2
Lead, American, Terms: For lots 12 tons and over 1/4¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.		
Lead, White, Dry, in bbls.....	6 1/2	@ 6 1/2
Zinc, American, dry.....	4 1/2	@ 5
Zinc, French:		
Paris, Red Seal, dry.....	9 1/2	@ 10 1/2
Paris, Green Seal, dry.....	10 1/2	@ 11 1/2
Antwerp, Red Seal, dry.....	10	@ 11
Antwerp, Green Seal, dry.....	10	@ 11
Zinc V. M. French, in Poppy Oil:		
Green Seal:		
Lots of 1 ton and over.....	12 1/2	@ 13 1/2
Lots of less than 1 ton.....	13 1/2	@ 14 1/2
Zinc V. M. French, in Poppy Oil:		
Red Seal:		
Lots of 1 ton and over.....	11 1/2	@ 12 1/2
Lots of less than 1 ton.....	12 1/2	@ 13 1/2
Discounts—French Zinc—Discounts to buyers of 10 bbl. lots of one or mixed grades 1% 25 bbls., 2% 50 bbls., 4%.		

Dry Colors—

Black, Carbon.....	5	@ 10
Black, Drop, American.....	4	@ 6
Black, Drop, English.....	5	@ 15
Black, Ivory.....	16	@ 20

Lamp, Com.....	4 1/2	@ 6
Blue, Celestial.....	4	@ 6
Blue, Chinese.....	29	@ 32
Blue, Prussian.....	27	@ 30
Blue, Ultramarine.....	4 1/2	@ 15
Brown, Spanish.....	1 1/2	@ 1
Carmine, No. 40.....	3.50	@ 3.60
Green, Chrome, ordinary.....	3 1/2	@ 6
Green, Chrome, pure.....	17	@ 25
Lead, Red, bbls., 1/2 bbls. and kegs:		
Lots 500 lb or over.....	7	@ 7
Lots less than 500 lb.....	7 1/2	@ 7 1/2
Litharge, American, bbls.....	7	@ 7
Ocher, American, Golden.....	2 1/2	@ 3 1/2
Ocher, French.....	14	@ 2 1/2
Ocher, Foreign, Golden.....	3	@ 4
Orange Mineral, English.....	10	@ 12
Orange Mineral, French.....	10 1/2	@ 12 1/2
Orange, Mineral, German.....	8 1/2	@ 10
Orange, Mineral, American.....	8 1/2	@ 8 1/2
Red, Indian, English.....	4 1/2	@ 5 1/2
Red, Indian, American.....	3	@ 3 1/2
Red, Turkey, English.....	4	@ 10
Red, Tuscan, English.....	7	@ 10
Red, Venetian, Amer.....	100	@ 100.50
Red, Venetian, English.....	100	@ 115.15
Sienna, Italian, Burnt and Powdered.....	1 1/2	@ 2
Sienna, Ital., Raw Powder.....	3	@ 4 1/2
Sienna, American, Raw.....	1 1/2	@ 2
Sienna, American, Burnt and Powdered.....	1 1/2	@ 2
Talc, French.....	10	@ 15.00
Talc, American.....	10	@ 15.00
Terra Alba, French.....	100	@ 100
Terra Alba, English.....	100	@ 100
Terra Alba, American.....	100	@ 100
No. 1.....	60	@ 70
Terra Alba, American.....	100	@ 100
No. 2.....	45	@ 50
Umber, Key, Ent. & Pow.....	2 1/2	@ 3 1/2
Umber, Turkey, Raw & Pow.....	2 1/2	@ 3 1/2
Umber, Burnt, Amer.....	1 1/2	@ 2
Umber, Raw, Amer.....	1 1/2	@ 2
Yellow, Chrome.....	11	@ 14
Vermillion, American Lead.....	10	@ 25
Vermillion, Quicksilver, bulk.....	65	@ 65
Vermillion, Quicksilver, bags.....	65	@ 65
Vermillion, English, Import.....	75	@ 90
Vermillion, Chinese.....	30.90	@ 1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$ ¢, @ 33 $\frac{1}{2}$ ¢, & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{2}$ ¢ per cent. discount to 33 $\frac{1}{2}$ ¢, and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, @ doz. \$3.00.....33 $\frac{1}{2}$ ¢
North's.....10%
Zimmerman—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils.....@ lb 6 $\frac{1}{2}$ ¢
Hay-Budden, Wrought.....@ 9 $\frac{1}{2}$ ¢
Horseshoe brand, Wrought.....@ 9 $\frac{1}{2}$ ¢
Trenton.....@ lb 9 $\frac{1}{2}$ ¢

Imported—

Peter Wright & Sons.....@ lb 10 $\frac{1}{2}$ ¢

Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15¢10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33 $\frac{1}{2}$ ¢

Augers and Bits—

Com. Double Spur.....@ 75¢10%
Jennings' Patn., reg. finish.....50¢10%
Black Lip or Blued.....60¢10%
Boring Mach. Augers.....70¢10%
Car Bits, 12-in. twist.....50¢10%
Ford's Augers and Car Bits.....40¢5%
Forster Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25%
No. 30, R. Jennings' list.....40¢7 $\frac{1}{2}$ ¢
Russell Jennings.....25¢10%
L. Hommedieu, Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50¢10%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40¢10%
Pugh's Black.....25%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers Bits.....60%
Snell's Car Bits, 12-in. twist.....60¢10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, 8-in. large, 3-in. 50¢10%
Clark's Pattern, No. 1, @ doz. \$26;
No. 2, \$18.....65%
Ford's, Clark's Pattern.....60¢5%
C. E. Jennings & Co., Steer's Pat.....25%
Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....@ \$3.00@3.25
German Pattern, Nos. 1 to 10,
\$1.60; 11 to 15, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00
Ames.....25¢10%
Universal.....20%
Wood's Universal.....35%
Ship Augers and Bits—

Ship Augers.....@ 45¢5¢10%
Ford's.....33¢5%
C. E. Jennings & Co.:
L. Hommedieu's.....15%
Wattrous.....35¢5%
Ohio Tool Co.'s.....40%
Snell's.....40%

Awl Hafts—See Handles, Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75@3.00
Unhanded, Shlivered.....gro. 63¢76¢
Unhanded, Patent.....gro. 66¢70¢
Pey Awls:
Unhanded, Patent.....gro. 31¢34¢
Unhanded, Shlivered.....gro. 65¢70¢
Scratch Awls:
Handled, Com.....gro. \$1.50@1.00
Handled, Socket.....gro. \$1.50@1.20
Harwood.....40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights:
First Quality.....\$6.75
Second Quality.....\$6.25
Double Bit, base weights:
First Quality.....\$9.00
Second Quality.....\$8.50

Axle Grease—

See Grease, Axle

Axles—

Concord, Iron or Steel
Concord, Solid Collar.....@ 1 $\frac{1}{2}$ ¢1 $\frac{1}{2}$ ¢
Concord, Solid Collar.....@ 1 $\frac{1}{2}$ ¢1 $\frac{1}{2}$ ¢

No. 1 Common, Loose.....3 $\frac{1}{2}$ ¢@3 $\frac{1}{2}$ ¢
No. 1 $\frac{1}{2}$ Com., New Style.....@ 4 $\frac{1}{2}$ ¢
No. 2 Solid Collar.....@ 4 $\frac{1}{2}$ ¢
Half Patent:
Nos. 7, 8, 11 and 12.....75¢@75¢5%
Nos. 13 to 14.....70¢10¢75¢5%
Nos. 16 to 18.....75¢10¢75¢10¢5%
Nos. 19 to 22.....75¢10¢75¢10¢5%

Boxes, Axle—

Common and Concord, not turned
lb. 4 $\frac{1}{2}$ ¢@5¢
Common and Concord, turned
lb. 5 $\frac{1}{2}$ ¢@6¢
Half Patent.....lb. 8 $\frac{1}{2}$ ¢@9¢

Bait—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20¢5%

Balances—

Caldwell new list.....50%
Pullman.....50¢10¢65%

Spring—

Spring Balances.....50¢10¢60%
Unadjusted:
Light Spg. Balances.....40¢10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%
Barb Wire—See Wire, Barb.

Bars—

Steel Crowbars, 10 to 40 lb.,
per lb., 3¢@3 $\frac{1}{2}$ ¢

Towel

No. 10 Ideal, Nickel Plate.....@ gro. \$8.50

Beams, Scale—

Scale Beams.....@ 40¢10¢50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered @ doz. \$0.85;
Tinned.....\$1.00
No. 11 Wire Coppered @ doz. \$1.10;
Tinned.....\$1.20
No. 10 Wire Galvanized @ doz. \$1.75
Western W. G. Co.:
No. 1 Electric.....@ gro. \$7.50
No. 2 Buffalo.....@ gro. \$9.00
No. 3 Perfection Dust.....@ gro. \$2.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned.....@ doz. \$1.23
Holt, No. 1, Tinned.....@ doz. \$1.50
Holt, No. B, Japanned.....@ doz. \$2.00
Holt, No. 2, Tinned.....@ doz. \$2.25
Lyon, No. 2, Japanned.....@ doz. \$1.25
Lyon, No. 3, Japanned.....@ doz. \$1.50
Taplin Mfg. Co.:
No. 60 Improved Dover.....\$6.00
No. 75 Improved Dover.....\$6.50
No. 100 Improved Dover.....\$7.00
No. 102 Improved Dover, Tinned.....\$8.50
No. 150 Improved Dover, Hotel.....\$15.00
No. 152 Imp'd Dover, Hotel, T'd.....\$17.00
No. 200 Imp'd Dover Tumbler.....\$8.50
No. 202 Imp'd Dover Tumbler, T'd.....\$9.50
No. 300 Imp'd Dover Mammoth.....\$25.00
Western W. G. Co., Buffalo.....\$7.00
Wonder (S. B. & Co.), @ gro. net, \$6.00

Bellows—

Blacksmith, Standard List.....60¢10¢70¢10%
Hand.....60¢10¢70¢10%
Inch.....6 7 8 9 10
Doz.....\$4.75 5.70 6.65 7.60 8.85

Molders—

Inch.....9 10 11 12 14
Doz.....\$8.00 9.00 10.50 12.50 14.50

Bells—

Ordinary goods.....75¢45¢75¢10¢45%
High grade.....70¢10¢70¢10¢45%
Jersey.....75¢10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55¢10%
Lever and Pull, Sargent's.....60¢10¢10%
Trip Gong.....50¢10¢50¢10¢45%
Yankee Gong.....55%

Hand—

White Metal.....60¢10¢60¢10¢45%
Nickel Plated.....50¢10¢60%
Steel.....60¢10¢60%
Cone's Globe Hand Bells.....35¢@35%
Silver Chime.....33¢@35%

Miscellaneous—

Farm Bells.....lb. 2 $\frac{1}{2}$ ¢
Steel Alloy Church and School
Gongs.....50¢10¢60%
Table Call Bells.....50¢50¢10%

Belting—

Extra Heavy, Short Lap.....60¢45%
Regular Short Lap.....60¢10¢45%
Standard.....70%
Light Standard.....70¢45%
Cut Leather Lacing.....60%
Leather Lacing Sides, per sq. ft. 22¢

Rubber—

Agricultural (Low Grade).....75¢75¢45%
Common Standard.....70¢10¢70%
Standard.....60¢45¢60¢10%
Extra.....60¢10¢60¢45%
High Grade.....60¢45¢50¢10%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Green River Tire Benders and Upsetters.....20%
Detroit Stoddard's Tire Upsetters, No. 1, \$1.25; No. 2, \$7.25;
No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain.....50%
Parts.....50%
Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks—

Common Wooden.....70¢10¢75%
Hartz St. Tackle Blocks.....50¢50¢5%
Hollow Steel Blocks, with Ford's Patent Sheaves.....50¢10%
Lane's Patent Automatic Lock and Junior Novelty, Mal. Iron.....50¢10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....30¢10¢40¢10%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....33 $\frac{1}{2}$ ¢

Boils—

Carriage, Machine, &c.—

Common Carriage (cut thread):
% 4 and 6 smaller.....75¢@
Larger and Longer.....65¢5¢@
Phila. Eagle \$3.00 list May 21, '99 50%

Bolt Ends, list Feb. 14, '95—

Machine, % x 4 and smaller 65¢10¢@
Machine, larger and longer 75¢@
65¢10¢@

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:
Inch.....3 4 5 6 8
Per doz. \$0.30 .35 .45 .60 .80
Cast Iron Spring Foot, Jap'd:
Inch.....6 8 10
Per doz.....\$1.20 1.50 2.25
Cast Iron Chain Flat Japanned:
Inch.....6 8 10
Per doz.....\$1.00 1.40 1.65
Cast Iron Flat Shutter, Jap'd., Brass Knobs:
Inch.....6 8 10
Per doz.....\$0.75 .95 1.25
Wrt Barrel Jap'd.....80¢@80¢10%
Wrt "Bronzed.....50¢50¢10%
Wrt Spring.....70¢10¢70¢10%
Wrt Shutter.....50¢50¢50¢10%
Wrt Square Neck.....75¢@75¢10%
Wrt Square Neck.....75¢@75¢10%
Ives' Patent Door.....60%

Plow and Stove—

Plow.....65¢10¢10¢70%
Stove.....87 $\frac{1}{2}$ ¢@10¢

Tire—

Common.....80¢10¢5%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....80%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....80%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84.....80%
Eagle Phila., list Oct. 16, '84.....80%
Mount Carmel, list Dec. 28, '99.....80%
Russell, Burdall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct. 16, '84.....80%
Upon Nut Co.:
Tire Bolts.....72 $\frac{1}{2}$ ¢

Borers, Tap—

Borers Tap, King, with Handle:
Inch.....1 $\frac{1}{2}$ 1 $\frac{1}{2}$ 1 $\frac{1}{2}$ 2
Per doz.....\$4.80 5.60 6.40 8.00
Inch.....2 $\frac{1}{2}$ 2 $\frac{1}{2}$ 2 $\frac{1}{2}$ 2 $\frac{1}{2}$
Per doz.....\$5.65 11.50
Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.60; No. 3, \$2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon.....15¢10%
Perfection.....40%
Seavey.....33 $\frac{1}{2}$ ¢
Stanley R. & L. Co.:
Nos. 240 to 400.....30%
Nos. 50 and 60.....35%

Braces—

Common Ball American.....\$1.25@1.30
Barber's.....50¢10¢60¢10%
Fray's Genuine Spofford's.....60%
Fray's No. 19 to 130, \$1 to 125, 207 to 414.....60%
C. E. Jennings & Co.....50¢5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat.....50%
Millers Falls Drill Braces.....25¢10%
P. S. & W. Co., Peck's Pat.....60¢60¢45%
Stanley R. & L. Co.:
Stanley.....35%
Victor.....45%

Brackets—

Wrought Steel.....80¢10¢80¢10¢45%
Griffin's Pressed Steel.....80¢80¢10%
Griffin's Folding Brackets.....70¢10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western W. G. Co., Wire.....60¢10%

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75¢20%
Western W. G. Co.....75¢10%
Wire Goods Co.....75¢10%10%

Buckets, Galvanized—

Price per dozen:
Quart.....19 12 14
Water, Regular.....1.49 1.70 1.90
Water, Heavy.....3.49 3.79 3.89
Fire, Rd. Bottom.....2.30 2.55 2.95
Well.....2.55 2.87 3.15

Bucks, Saw—

Hoosier.....@ gro. \$36.00

Bull Rings—See Rings, Bull

Butts—

Wrought, list Sept., '96.....20¢45%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad.....40¢10¢50%
Fast Joint, Narrow.....40¢10¢50%
Loose Joint.....70¢10¢75%
Loose Pin.....70¢10¢75%
Mayer's Hinges.....70¢10¢75%
Parliament Butts.....70¢10¢75%

Wrought Steel—

Table and Back Flaps.....75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70¢10%
Loose Pin, Ball and Steeple Tip.....85%
Japanned Ball Tip Butts.....70¢10%
Bronzed, Wrt., Nar. and Inside Blind Butts.....65¢10%

Cages, Bird—

Hendryx Brass:
3000, 5000, 1100 series.....33 $\frac{1}{2}$ ¢
1200 series.....33 $\frac{1}{2}$ ¢
200, 300, 600 and 900 series.....40¢

Manitux Bronze: 40x10 1/2
Henry's Enamelled: 40x10 1/2

Calipers—See Compasses.

Calks, Toe and Heel—

Plant, 1 prong... per lb. 44¢
Sharp, 1 prong... per lb. 44¢
Burke's Blunt... 44¢
Burke's Sharp... 44¢
Gautier, Blunt... 44¢
Gautier, Sharp... 44¢
Perkins, Blunt Toe... 44¢
Perkins, Sharp Toe... 44¢

Can Openers—

See Openers, Can.

Cans, Milk—

Illinois Pattern... 1.35 8 10 gal.
New York Pattern... 1.50 2.20 2.45 each.
Baltimore Pattern... 1.50 2.20 2.45 each.
Piquette... 1.35 1.60 1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:
3 5 10 gal.
\$18.00 60.00 129.00 gro., net.

Caps, Percussion—

Eley's E. B. 52@55¢
G. D. 34@35¢
F. L. 40@42¢
G. E. 48@50¢
Musket 62@63¢

Primers—

Berdan Primers, \$2 per M. 20%
B. L. Caps (Sturtevant Shell) \$2 per M. 20%
All other primers per M. \$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F. \$5.50 10x65%
38 C. F. \$7.00 10x65%
32 cal. Rim. \$1.50 10x65%
32 cal. Rim. \$2.75 10x65%
B. B. Caps, Con. Ball, Sngd. \$1.90
B. B. Caps, Round Ball. \$1.49
Central Fire. 25%
Target and Sporting Rifle. 15x50
Primed Shells and Bullets. 15x10
Rim Fire, Sporting. 50%
Rim Fire, Military. 15x50

Casters—

Bed 70@70x10
Plate 60x10@60x10x5
Philadelphia 75@75x10
Acme, Ball Bearing. 33%
Boss 70x10
Boss Anti-Friction. 70x10
Gem (Roller Bearing) 50
Martin's Patent (Phoenix). 45%
Standard Ball Bearing. 45%
Tucker's Patent low list. 30%
Yale (Double Wheel) low list. 50%

Cattle Leaders—

See Leaders, Cattle.

Chain, Coil—

American Coil, Straight Link:
5-16 3/4 5-16 3/4 7-16 1/2 9-16
\$8.60 5.80 4.85 4.10 3.95 3.85 3.80
3/8 3/4 1 to 1 1/4 to 1 1/2 inch.
\$3.75 3.60 3.55 3.70
German Coil. 60x10x10@70%

Halter—

Halter Chains. 60x5@60x10
German Pattern Halter Chain.
list July 24, '97. 60x10x10
Covert Mfg. Co. 35x5
Covert's Saddlery Works 70%
Halter 70%

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/2-6 3/4, Str'ght, with ring. \$23.50
6 1/2-6 3/4, Str'ght, with ring. \$25.50
6 1/2-6 3/4, Str'ght, with ring. \$29.50
6 1/2-10-2, Str'ght, with ring. \$34.00
NOTE—Add 2c per pair for Hooks.
Twist Traces 2c per pair higher than
Straight Links.

Eastern Standard Traces, Wag-

on Chain, &c.— 60x10

Miscellaneous—

Jack Chain, list July 10, '93:
Iron 60x10x10@70%
Brass 60x10x10@60x10x10
Safety Chain. 75x10x10
Gal. Pump Chain. 10x10x10
Covert Mfg. Co.:
Brest 35x5
Heel 35x5
Rein 35x5
Stallion 35x5
Covert Sad. Works: 70%
Hold Back. 70%
Rein 70%
Oneida Community:
Am. Dog Leads and Kennel Chains.
Niagara Dog Leads and Kennel
Chains. 45x50x5
Wire Goods Co.:
Dog Chain. 70x10
Universal Dbl.-Jointed Chain. 50%
Chain and Ribbon, Sash—
Oneida Community:
Copper Chain. 60x5
Steel Chain. 60%
Pullman:
Bronze Chain. 00%
Steel Chain. 60x10
Sash Chain Attachments, per set. 8¢
Aluminum Sash Ribbon, per set.
ft. \$1.25@3.00
Sash Ribbon Attachments, per set. 8¢

Chalk—(From Jobbers.)

Carpenters' Blue. 38¢@10¢
Carpenters' Red. 37¢@35¢
Carpenters' White. 23¢@30¢

See also Crayons.

Checks, Door—

Bardsley's. 45%
Eoline. 60x10
Pullman, per set. 54.00
Russwin. 40%

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools. 55%
Youth's Chests, with Tools. 40%
Gentlemen's Chests, with Tools. 39%
Farmers', Carpenters', etc., Chests,
with Tools. 25%
Machinists' and Pipe Fitters'
Chests, Empty. 50%
Tool Cabinets. 50%
C. E. Jennings & Co.'s Machinists'
Tool Chests. 33x16

Chisels—

Socket Framing and Firmer
Standard List. 75¢@75¢10%
Huck Bros. 75¢@75¢10%
Charles Buck. 30%
C. E. Jennings & Co. Socket Firmer
No. 10. 60%
C. E. Jennings & Co. Socket Fram-
ing No. 15. 60%
Ohio Tool Co.'s. 70%
Swan's. 75%
L. & I. J. White. 30x20x5
L. & I. J. White, Tanged. 25x5

Tanged—

Tanged Firmers. 33 1-36@40%
Huck Bros. 30%
Charles Buck. 30%
C. E. Jennings & Co. Nos. 191, 181. 25%

Cold—

Cold Chisels, good quality. 13¢@15¢
Cold Chisels, fair quality. 11¢@12¢
Cold Chisels, ordinary. 9¢@10¢

Chucks—

Beach Pat., each \$8.00. 35x5
Empire. 25%
Blacksmiths'. 25%
Jacobs' Drill Chucks. 25%
Pratt's Positive Drive. 25%
Skinner Patent Chucks. 50%
Independent Lathe Chucks. 50%
Universal. 50%
Combination. 50%
Drill Chucks, New Model. 30%
Drill Chucks, Standard. 45%
Drill Chuck, Skinner Pat. all sizes. 30%
Drill Chucks, Positive Drive. 25%
Planer Chucks. 25%
Face Plate Jaws. 40%
Standard Tool Co.:
Improved Drill Chuck. 45%
Union Mfg. Co.:
Combination. 50%
Czar Drill. 35%
Combination Geared Scroll. 40%
Geared Scroll. 40%
Independent. 50%
Independent Steel. 40%
Union Drill. 50%
Universal. 50%
Independent Iron P. Plate Jaws. 40%
Independent Steel P. Plate Jaws. 40%
Westcott Patent Chucks:
Lathe Chucks. 50%
Little Giant Auxiliary Drill. 50%
Little Giant Double Grip Drill. 50%
Little Giant Drill, Improved. 50%
Oneida Drill. 50%
Scroll Combination Lathe. 50%

Clamps—

Adjustable, Hammers. 20x20x5
Cabinet, Sargent's. 50x10
Carriage Makers', P. S. & W.
Co. 40x10x50
Carriage Makers', Sargent's. 40x10x50
Ready Parallel. 35x10
Lineman's, Utica Drop Forge & Tool
Co. 40%
Saw Clamps, see Vices, Saw Filers.
Wood Workers, Hammers. 40x10

Cleaners, Drain—

Iwan's Champion, Adjustable. 55%
Iwan's Champion, Stationary. 45%

Sidewalk—

Star Socket, All Steel. 3¢ doz. \$4.05 net
Star Shank, All Steel. 3¢ doz. \$3.24 net
W. & C. Shank, All Steel. 3¢ doz.
7 1/2 in. \$3.00; 8 in. \$3.25

Cleavers, Butchers—

Foster Bros. 30%
New Haven Edge Tool Co.'s. 45%
Payette R. Plumb. 33x10x33x10
L. & I. J. White. 30%

Clippers—

Chicago Flexible Shaft Company:
38 Chicago Horse. 33x75 15%
1902 Chicago Horse. 30x75 10%
20th Century Horse, each. 35.00 20%
Lightning Belt. 15x10 15%
Chicago Belt. 32x10 15%
Stewart's Patent Sheep. 12x75 20%

Clips, Axle—

Regular Styles, list July 1, '05. 80%
Cloth and Netting, Wire
—See Wire, &c.

Cocks, Brass—

Hardware list:
Compression, Plain Bibbs,
Globe, Kerosene, Racking,
&c. Cocks. 75¢@75x5%

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Son's list. 40%
Leather, Walter B. Stevens & Son's
list. 40%

Combs, Curry—

Metal Stamping Co. 40%
Mane and Tail—
Covert's Saddlery Works. 60x10

Compasses, Dividers, &c.

Ordinary Goods. 75¢@75x10%
Bemis & Call Hdw. & Tool Co.:
Dividers. 65%
Callipers, Double. 65%
Callipers, Inside or Outside. 65%
Callipers, Wing. 60%
Compasses. 50%

Conductor Pipe—

L. C. L. to Dealers:
Galvanized.
Territory. Nested, Not nested.

Eastern. 70x15% 70x10%
Central. 70x15% 70x10%
Southern. 70x15% 70x10%
So. Western. 60x10% 60x10%

Copper.

14x16 oz.
Eastern. 50x10%
Central. 50x10%
Southern. 50x10%
So. Western. 50x10%
Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each. 2 3 4 6 8
Labrador. \$1.30 \$1.30 \$1.80 \$2.10 \$2.70
Gal. 3 4 6 8
Ice land, ea. \$1.80 \$2.10 \$2.40 \$3.00
Gal. 2 3 4 6 8
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00
Galvanized, Lined, side handles,
Gal. 2 3 4 6 8
Each. \$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enamelled. 25%
Agate Lined. 25%

Coopers' Tools—

See Tools, Coopers.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
and heavier, 20¢@25¢; light-
er than 3 lbs. to pair 22¢@23¢

Cord—

Braided, Drab. 1b. 35¢
Braided, White, Com. Nos. 8
to 12, 2¢; No. 7, 2 1/2¢; No. 6,
2 1/2¢.

Cable Laid Italian—

1b., A, 18¢; B, 16¢
Common India. 1b. 10¢@10 1/2¢
Cotton Sash Cord, Twisted. 17¢@19¢
Patent Russia. 1b. 6 1/4¢
Cable Laid Russia. 1b. 6 1/4¢
India Hemp, Braided. 1b. 6 1/8¢
India Hemp, Twisted. 1b. 12¢@13¢
Patent India, Twisted. 1b. 12¢@13¢
Annisston Cordage Co.: Braided Cotton,
Old Glory, Nos. 7 to 12. 3¢ lb. 20¢
Annisston, Nos. 8 to 12, 2 1/2¢; No. 7,
2 1/2¢; No. 6, 2 1/2¢; Annisston
Drab, Nos. 7 to 12, 3¢ lb. 26¢;
Annisston Mahogany, 27¢ lb. 26¢
Pearl Braided, cotton, No. 6, 3¢ lb.
2 1/2¢; No. 7, 2 1/2¢; No. 8 to 12, 2 1/2¢
Edgoston Braided, Nos. 8, 9 and
10, 2¢; 7, 2 1/2¢; 6, 2 1/2¢.
Harmony Cable Laid Italian, Nos. 7
to 10. 3¢ lb. 23¢

Peerless:
Cable Laid Italian. 16¢
Cable Laid Russian. 14¢
Cable Laid India. 12¢
Braided India. 10¢

Pullman:
Wire Sash Cord. 10%
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton. 3¢ lb. 40¢
Braided, Italian Hemp. 3¢ lb. 40¢
Braided, Linen. 3¢ lb. 55¢
Braided, White Cotton or Spot. 3¢ lb. 28¢

Massachusetts, White. 3¢ lb. 28¢
Massachusetts, Drab. 3¢ lb. 32¢
Phoenix, White, Nos. 8 to 12, 2 1/2¢;
No. 7, 2 1/2¢; No. 6, 2 1/2¢.

Silver Lake:
A quality, Drab. 40¢
A quality, White. 35¢
B quality, Drab. 35¢
B quality, White. 30¢
Italian Hemp. 40¢
Lined. 57 1/2¢

See also Chain and Ribbon.

Wire, Picture—
List Oct., '00.
85¢ 10¢ 10¢ 85¢ 10¢ 10¢ 5%
Hendryx Standard Wire Picture Cord.
85¢ 10¢ 5%

Cradles—
Grain. 40¢ 12 1/2%

Crayons—
White Round Crayons, gr. 6¢ 6 1/2¢
Cases. 100 gro., \$5.00 at factory.
D. M. Stewart Mfg. Co.:
Jumbo Crayons, gr. \$2.50 28%
Metal Workers' Crayons, gr. \$2.50 28%
Soapstone Pencils, round, flat
or square. \$1.50
Rolling Mill Crayons. gr. \$2.50
Railroad Crayons (composition).
gr. \$2.00 Case lots.

Zelnicke's Lumber:
Red, Blue, Green. 3¢ gro. 35.50
Black. 3¢ gro. 41.00
See also Chalk.

Crooks, Shepherds—
Fort Madison, Heavy. 3¢ doz. \$7.00
Fort Madison, Light. 3¢ doz. \$6.50

Crow Bars—See Bars, Crow.

Cultivators—
Victor Garden. 50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1817. 3¢ doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Andrus. 3¢ doz. \$3.00
Wm. Rogers & Son. 3¢ doz. \$2.50

Cutters—Glass—
H. H. Mayhew Co. 40%
Red Devil. 50%
Smith & Hemenway Co. 50%
Woodward. 40%

Meat and Food—
American. 30%
Nos. 1 2 3 4 H 5
Ideal. \$5 \$7 \$10 \$25 \$50 \$60
Enterprise. 25¢@25x75%
Nos. 3 10 12 22 32
Each. \$2 \$3 \$2.75 \$4.50 \$6
Dixon's. 3¢ doz. 40¢@50%
Nos. 1 2 3 4
Ideal. \$14.00 \$17.00 \$19.00 \$30.00
Little Giant. 40¢@40x50%
Nos. 305 310 312 320 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
N. E. Food Choppers. 25%
New Triumph No. 605. 3¢ doz. \$24.00
Nos. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Russwin Food, No. 1, \$24.00; No. 2,
\$27.00; 45¢ 10¢ 10¢
Woodruff's. 3¢ doz. 40¢@50%
Nos. 100 150
Enterprise Beef Shavers. 25¢@30%
Slaw and Kraut—
Henry Diaston & Sons. 40%
Slaw, Corn Grater, &c. 40%

Kraut Cutters, 24 x 7, 26 x 8, 30
x 9. 55%
Kraut Cutters, 36 x 12, 40 x 12. 55%
J. M. East Mfg. Co.:
Slaw Cutters, 1 Knife. 3¢ doz. \$3.00
Combined Slaw Cutter and Corn
Grater. 3¢ doz. \$4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters. 40%
Slaw Cutters, 1 Knife. 3¢ gr. \$180x50
Slaw Cutters, 2 Knife. 3¢ gr. \$220x50

Tobacco
All Iron, Cheap. doz. \$1.25@1.50
Enterprise. 25¢
National, 3¢ doz. No. 1, \$21; No. 2,
\$18
Sargent's, 3¢ doz. No. 2. 60%
Sargent's, Nos. 12 and 21. 60x10

Washer—
Appleton's, 3¢ doz. \$16.00. 50x10x10

Diggers, Post Hole, &c.—
Dalley Post Hole Auger, per doz. \$9.00
Iwan's Imp'd Post Hole Auger. 10x5
Iwan's Vaughan Pattern Post Hole
Augers. 3¢ doz. \$6.25
Iwan's Perfection Post Hole Auger. 3¢ doz. \$8.25
Iwan's Split Handle Post Hole Dig-
gers. 3¢ doz. \$7.25
Kohler's Universal. 3¢ doz. \$14.00
Kohler's Little Giant. 3¢ doz. \$12.00
Kohler's Hercules. 3¢ doz. \$10.00
Kohler's Invincible. 3¢ doz. \$9.00
Kohler's Rival. 3¢ doz. \$8.00
Kohler's Pioneer. 3¢ doz. \$7.00
Never-Break Post Hole Diggers, 3¢
doz. \$24.00
Samson, 3¢ doz. \$34.00. 25%

Dividers—See Compasses.

Doors, Screen—
Phillips', style E, 7 1/2 in. 3¢ doz. \$10.00
Phillips', style 077, 7 1/2 in. 3¢ doz. \$7.50
Phillips', style x-y, 7 1/2 in. 3¢ doz. \$10.50

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, 3¢
doz. \$18; No. 2, \$15; No. 3, \$12;
No. 4, \$18.

Drawing Knives—
See Knives, Drawing.

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers. 35%
Diamond Wheel Dresser Cutters. 35%

Drills and Drill Stocks—
Common Blacksmiths' Drill,
each \$1.50@1.75
Breast, Millers Falls. 15x10
Breast, P. S. & W. 40%
Goodell Automatic Drills. 40x50x10
Johnson's Automatic Drills, Nos. 2
and 3. 16%
Johnson's Drill Points. 16%
Millers Falls Automatic Drills. 33x10
Ratchet, Curtis & Curtis. 25%
Ratchet, Parker's. 40%
Ratchet, Weston's. 40%
Ratchet, Weston's, Style H Im-
proved. 40%
Ratchet, No. 012. 40%
Ratchet, Whitney's, P. S. & W. 50%
Whitney's Hand Drill, No. 1, \$10.00;
Adjustable, No. 10, \$12.00. 33%

Twist Drills—
Bit Stock. 60¢ 10¢ 10¢ 70%
Taper and Straight Shank. 60¢ 10¢ 60¢ 10¢ 65%

Drivers, Screw—
Screw Driver Bits, per doz. 45¢@50¢
Balsey's Screw Holder and Driver, 3¢
doz. 2 1/2 in. \$6; 4 in., \$7.50; 6 in.,
\$9
Buck Bros.' Screw Driver Bits. 30%
Champion. 50%
Edson. 60%
Fray's Hol. H'dle Sets, No. 3, \$12.50
Gay's Double Action Ratchet. 35%
Goodell's Auto. 50x10x10x50x10x50
Harwood. 40%
Mayhew's Black Handle. 40%
Mayhew's Monarch. 40x10
Millers Falls, Nos. 20 and 21. 25x10
Millers Falls, Nos. 11, 12, 11, 42. 15x10
New England Specialty Co. 50x10
Sargent & Co.'s:
Nos. 1 and 60. 50x10x10
Nos. 50, 53 and 55. 60x10%
Nos. 20 and 40. 70x10
Smith & Hemenway Co. 40x5
H. D. Smith & Co.'s Perfect H'dle. 40%
Stanley B. & L. Co.'s:
No. 64, Varn. Handles. 65%
No. 86. 75%
Victor. 55%
Defiance. 70%
Swan's:
Nos. 7565 to 7568. 50%
No. 7549. 10x10

Eave Trough, Galvanized—
Territory. L. C. L.
Eastern. 80x5%
Central. 75¢ 10¢ 10%
Southern. 75¢ 12 1/2¢
No. Western. 75¢ 5%

Terms—2% for cash. Factory ship-
ments generally delivered.

See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories:
Galv. Steel and Galv. C. C.
Iron and Steel, Standard
Gauge. 60x10%
No. 26. 35%
No. 23. 25%
No. 22. 10%
Copper. 37x5%
Perfect Elbows (S. S. & Co.). 40%

Emery, Turkish—
4 to 16 5 1/2 to 220 Flour.
Kegs. 1b. 5¢ 5 1/2¢ 3 1/2¢
14 Kegs. 1b. 5 1/2¢ 5 1/2¢ 3 1/2¢
10 Kegs. 1b. 5 1/2¢ 6¢ 4¢
10 lb. cans.
10 in case. 6 1/2¢ 7¢ 6¢
10 lb. cans, less
than 10. 10¢ 10¢ 8¢
Less quantity. 1¢ 1¢ 1¢ 8¢
NOTE—In lots 1 to 3 tons a discount
of 1% is given.

Fasteners, Blind—

Zimmerman's	50&10%
Warriner's	40&10%
Ives	40%

Cord and Weight—**Faucets—**

Cork Lined	50&50&10%
Metallic Key, Leather Lined	50&10%
Red Cedar	60&10%
Petroleum	70&10%
B. & L. B. Co.	60&10%
Star	60
West Lock	50&10%
John Sommer's Peerless Tin Key	40
John Sommer's Boss Tin Key	40
John Sommer's Victor M. Key	50&10%
John Sommer's Duplex Metal Key	40
John Sommer's Diamond Lock	40
John Sommer's I. X. L. Cork Lined	50
John Sommer's Reliable Cork Lined	50&10%
John Sommer's Chicago Cork Lined	50
John Sommer's O. K. Cork Lined	50
John Sommer's No Brand, Cedar	50
John Sommer's Perfection, Cedar	40
McKenna, Brass	25
Burglar Proof, N. P.	25
Improved, 1/4 and 1/2 inch	25
Self Measuring	40&10%
Enterprise, 1/2 doz. \$36.00	40&10%
Lane's, 1/2 doz. \$36.00	40&10%
National Measuring, 1/2 doz. \$36.00	40&10%

Felloe Plates—

See Plates, Felloe.

Files— Domestic—

List revised Nov. 1, 1899.

Best Brands	70&10%
Standard Brands	75&10%
Lower Grade	75&10%

Imported—

Stubs' Tapers, Stubs' list, July 24, '97	33 1/3-40%
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Fixtures, Fire Door—

Richards Mfg. Co.	\$3.75
Universal, No. 103	\$3.75
Special, No. 104	\$3.75
Visible Links, No. 96	50
Expansion Bolts, No. 107	60&10%

Grindstone—

Net Prices:				
Inch	15	17	19	21
Per doz.	\$3.25	3.75	4.25	4.75
P. S. & W. Co.	30	30	40	40
Reading Hardware Co.	60			
Sawmills	70			
Stowell's Giant Grindstone Hanger		40	40	40
Stowell's Grindstone Fixtures, Extra		50	50	50
Heavy		50	50	50
Stowell's Grindstone Fixtures, Light		60	60	60

Fodder Squeezers—

See Compressors.

Forks—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Easy Potato	60&10%
Victor, Hay	60&15&2%
Victor, Manure	66
Victor, Header	66
Champion, Hay	65
Champion, Header	65
Champion, Manure	60&15&2%
Columbia, Hay	60&20
Columbia, Manure	70
Columbia, Spading	70&12%
Hawkeye Wood Barley	60&10%
W. & C. Potato Digger	60&10%
Acme Hay	60&20
Acme Manure, 4 tine	60&10&5%
Dakota Header	60&20
Jackson Steel Barley	60&20
Kansas Header	65
W. & C. Favorite Wood Barley	40
Plated—See Spoons	

Frames— Saw—

White, 8'x7' Bar, per doz.	75@80¢
Red, 8'x7' Bar, per doz.	\$1.00@1.25
Red, Dbl. Brace, per doz.	\$1.40@1.50

Freezers, Ice Cream—

Qt.	1	2	3	4	6
Each	\$1.30	\$1.30	\$1.90	\$2.20	\$2.80

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.**Fuse— Per 1000 Feet.**

Hemp	\$2.75
Cotton	3.20
Waterproof Sgl. Taped.	3.65
Waterproof Dbl. Taped.	4.40
Waterproof Tpl. Taped.	5.15

Gates, Molasses and Oil—

Stebbins' Pattern	80&10%
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Gauges—

Marking, Mortise, &c.	50&10%
Chapin-Stephens Co.	50&10%
Marking, Mortise, &c.	50&10%
Scholl's Patent	50&10%
Door Hangers	50&10%
Stanley R. & L. Co.'s Butt and Rabbit Gauge	35
Marking and Mortise	60
Wire, Brown & Sharpe's	25
Wire, Morse's	25
Wire, P. S. & W. Co.	25

Gimlets— Single Cut—

Numbered assortments, per gro.

Nail, Metal, No. 1	\$2.00	2, \$2.30
Spike, Metal, No. 1	\$1.00	2, \$1.30
Nail, Wood Handled, No. 1	\$2.20	2, \$2.60
Spike, Wood Handled, No. 1	\$1.30	2, \$1.60

Glass, American Window—

See Trade Report.

Glasses, Level—

Chapin-Stephens Co.	60&60&10&10%
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Glue, Liquid Fish—

Bottles or Cans, with Brush	25&10%
International Glue Co. (Martha's)	40%

Grease, Axle—

Common Grade	gro. \$1.50@1.60
Dixon's Everlasting, 10-lb pails, ea.	55¢
Dixon's Everlasting, in boxes, 1/2 doz.	1 lb. \$1.20; 2 lb. \$2.00
Helmet Hard Oil	25%

Grips, Nipple—

Perfect Nipple Grips	40&10&2%
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Griddles, Soapstone—

Pike Mfg. Co.	33 1/3@33 1/3&10%
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Grindstones—

Bicycle Emery Grinder	\$6.50
Bicycle Grindstones, each	\$2.50@3.00
Pike Mfg. Co.	
Improved Family Grindstones, per inch, 1/2 doz.	\$2.00
Pike Mower and Tool Grinder, each	\$6.00
Velox Ball Bearing, Mounted, Angle Iron Frames, each	\$3.00

Halters and Ties—

Cow Ties	60&10%
Covert Mfg. Co.	60&10%
Web	35&5%
Jute Rope	50
Sisal Rope	30&10%
Cotton Rope	45
Hemp Rope	45
Covert's Saddlery Works	70
Web and Leather Halters	70
Jute and Manila Rope Halters	70
Sisal Rope Halters	60&20%
Jute, Manila and Cotton Rope Ties	70
Sisal Rope Ties	60&10%
Oneida Community	40&40&5%
Am. Coil and Halters	45&50%
Am. Cow Ties	45&50%
Niagara Coll and Halters	45&50&5%
Niagara Cow Ties	45&50&5%
E. T. Rugg & Co.	
Leather Halters	50
Web Halters and Webbing	50
Jute and Sisal Rope	50
Jute and Sisal Horse and Cattle Ties	60
Cotton Horse Ties	60
Livestock Ties, Braided	60

Hammers—**Handled Hammers—**

Heller's Machinists'	40&10%
Heller's Farriers	40&10%
Magnetic Tack, Nos. 1, 2, 3	\$1.25, \$1.50, \$1.75
Peck, Stow & Wilcox, Steel	50
Fayette R. Plumb	
Plumb, A. E. Nail	33 1/3&5%
Engineers' and B. S. Hand	50&7 1/2&5%
Machinists' Hammers	50&50&10&5%
Riveting and Tinner's	40&25&40&10&2 1/2%
Sargent's C. S. New List	40

Heavy Hammers and Sledges—

Under 3 lb., per lb.	50¢
3 to 5 lb., per lb.	50¢
Over 5 lb., per lb.	30¢
Wilkinson's Smiths'	1 lb. 91¢@10¢

Handles—**Agricultural Tool Handles**

Axe, Pick, &c.	60&10%
Hoe, Rake, &c.	55&10%
Fork, Shovel, Spade, &c.	55&10%
Long Handles	55&10%
D Handles	50&10%

Cross-Cut Saw Handles—

Atkins'	40
Champion	45&45&10%
Diston's	50

Mechanics' Tool Handles—

Auger, assorted	gro. \$2.50@3.00
Brad Axl.	1/2 doz. \$1.65@1.75

Chisel Handles—

Apple Tanged Firmer, gro. assorted	\$2.40@2.65
Hickory Tanged Firmer, gro. assorted	\$2.15@2.40
Apple Socket Firmer, gro. assorted	\$1.75@1.95
Hickory Socket Firmer, gro. assorted	\$1.45@1.60
Hickory Socket Framing, gro. assorted	\$1.60@1.75
File, assorted	gro. \$1.30@1.40
Hammer, Hatchet, &c.	60&10%

Hand Saw, Varnished, doz.

80&85¢; Not Varnished	65¢@75¢
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Plane Handles—

Jack, doz. 3/4"	Jack, Bolted 75¢
Fore, doz. 4 1/2"	Fore, Bolted 90¢
Chapin-Stephens Co.	
Carving Tool	40&40&10%
Chisel	65&65&10%
File and Awl	65&65&10%
Saw and Plane	40&40&10%
Screw Driver	40&40&10%
Millers Falls Adj. and Ratchet Auger Handles	15&10%
Nicholson Simplicity File Handle	1/2 doz. \$1.85@2.10

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c.

Alth Mfg. Co.	
Reliable, No. 1	per doz. \$8.00
Reliable, No. 2	per doz. \$9.00

Chicago Spring Butt Co.

Friction	25
Oscillating	25
Big Twin	25
Chisholm & Moore Mfg. Co.	
Spring Car Door	50
Elevator	30
Railroad	50
Cronk & Carrier Mfg. Co.	
Loose Axle	60&10%
Roller Bearing	70
Griffin Mfg. Co.	
Solid Axle, No. 10	\$12.00
Roller Bearing, No. 11	\$15.00
Roller Bearing, Ex. Hy., No. 22	\$18.00
Hinged Hangers	\$16.00
Lane Bros.	
Parlor, Ball Bearing	\$4.00
Parlor, Standard	\$3.15
Parlor, No. 105	\$2.85
Parlor, New Model	\$2.80
Parlor, New Champion	\$2.25
Door, Standard	60&5%
Hinged	60
Covered	60&2%
Special	70&5%
Lawrence Bros.	
Advance	60&10%
Cleveland	75
Clipper, No. 75	60&10%
Crown	60&10%
Easy Parlor Door, Dbl. Sets	\$2.50; Single Sets, \$1.25
Giant	60&5%
Hammam	60&5%
New York	60&10%
Peerless	75
Sterling	60&10%
McKinney Mfg. Co.	
No. 1, Special	60&10%
No. 2, Standard	60&10%
Hinged Hangers	\$16
Meyers' Staying Hangers	60&5%
Richards Mfg. Co.	
Pioneer Wood Track No. 3	\$2.00
Ball B'r'g St'l Track No. 10	\$4.50
Roller B'r'g St'l Track No. 12	\$2.15
Roller B'r'g St'l Track No. 13	\$2.30
Here's Adj. Track No. 19	50&10%
Adjustable Track Tandem Trolley Track No. 16	50&10%
Seal, Steel Track No. 8	\$2.25
Auto Adj. Track No. 22	50&10%
Trolley B. D. No. 17	\$1.25
Trolley F. D. No. 120	\$2.10
Trolley F. D. No. 121	\$2.25
Trolley F. D. No. 150	\$2.35
Safety Underwriters F. D. No. 101	50
Tandem No. 41, 3 1/2 and 3 3/4	10%
Palace, Adjustable Track No. 132	50&10%
Rural, Adjustable Track No. 122	50&10%
Ives' Wood Track No. 1	\$2.00
Trolley B. D. No. 20	50&10%
Trolley B. D. No. 24	\$1.30
Trolley B. D. No. 27	\$1.40
Trolley B. D. No. 29	\$1.60
Roller Bearings Nos. 39, 41, 43	75
Anti-friction No. 42	60&20%
Hinged Tandem No. 48	60&5%
Folding Door B. B. Swivel No. 130	40
Safety Door Hanger Co.	
King's Safety	60
U. S. Standard Hinge	60
Stowell Mfg. & Foundry Co.	
Acme Parlor Ball Bearing	40
Ajax Hinge Door	60
Apex Parlor Door	50&10&5%
Atlas	50
Baggage Car Door	50
Climax Anti-Friction	50&10%
Elevator	40
Express	50
Freight Car Door	60
Instalate	60&10%
Lundy Parlor Door	50&10%
Magic	60
Matchless	60&10%
Nansen	70&5%
Parlor Door	50&10%
Railroad	50&10%
Rex Hinge Door	60
Street Car Door	50
Steel, Nos. 300, 404, 500	50&10%
Underwriters' Fire Door	40
Wild West Warehouse Door	50
Zeith for Wood Track	50&10%
A. L. Sweet Iron Works	
Check Back	70
Climax Anti-Friction	50&10%
Eagle	70
Hyle Hinge	60
Perfection	60
Pilot	60
Pilot Hinge	60
Rider Wooster	65
Western Pattern	70
Taylor & Boggs Fy Co's Kidder's Roller Bearing	50&15&10&5%
Wilcox Mfg. Co.	
Bike Roller Bearing, 1/2 doz.	\$5.00
C. J. Roller Bearing	60&10%
Cycle Ball Bearing	50
Dwarf Ball Bearing	40
Ives Wood Track	60&10%
L. T. Roller Bearing	60&10&5%
New Era Roller Bearing	50&10%
O. K. Roller Bearing	60&10&5%
Prindle Wood Track	60
Richards' Wood Track	60
Richards' Steel Track	60&10%
Spencer Roller Bearing	60&10%
Tandem, Nos. 1 and 2	60
Underwriters' Roller Bearing	40
Velvet	60
Wilcox Auditorium Ball B'r'g	20
Wilcox Barn Trolley No. 123	40
Wilcox Elv. Door, Nos. 112 and 122 1/2	50
Wilcox Elv. Door, No. 132	40
Wilcox Fire Trolley, Roller Bearing	30
Wilcox Fire Trolley, Roller Bearing	40
Wilcox New Century	50&10&10%
Wilcox O. K. Steel Track	50
Wilcox O. K. Trolley	50
Wilcox Trolley Ball Bearing	40
Wilcox Wideman Narrow Gauge Ball Bearing	40
For Track, See Rail.	

Hangers— Garment—

Pullman Trouser, 1/2 gro. 1 pair Flat Aluminov.	\$9.00; 1 pair Round Nickleled, \$9.00; 4 pair Round Nickleled, \$27.00
Victor Folding	per gro. \$9.00
Western, W. G. Co.	70&10%

Gate—

Myers' Patent Gate Hangers, 1/2 doz. net	\$1.50
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Joist and Timber—

Lane Bros. Co.	30
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Hasps—

Griffin's Security Hasp	50
McKinney's Perfect Hasp, 1/2 doz.	50

Hatchets—

Regular list, first quality	50
Second quality \$1.00 per doz. less than first quality	

Heaters, Carriage—

Heaters, Carriage—

Clark, No. 5	\$1.75; No. 51B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 7D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50.....	15
Clark Coal, 1/2 doz.	\$0.75.....	10

Wrought Iron Hinges—
Strap and T Hinges, &c., list
December 20, 1904:

Light Strap Hinges.....	70%
Heavy Strap Hinges.....	75%
Light T Hinges.....	65%
Heavy T Hinges.....	60%
Extra H'y T H'g's.....	70%
Hinge Hasps.....	50%
Cor. Heavy Strap.....	75%
Cor. Ex. Heavy T.....	70%
Screw Hook.....	6 to 12 in. 1b. 3%
and Strap.....	1 1/2 to 20 in. 1b. 3 1/2%
	22 to 36 in. 1b. 3 1/2%

Screw Hook and Eye:	
3/4 to 1 inch.....	1b. 6 1/2%
5/8-inch.....	1b. 7 1/2%
1/2-inch.....	1b. 8 1/2%

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers.....35%**Hods— Coal—**

Inch.....	15	16	17	18
Gale, Open.....	\$2.50	2.75	3.00	3.25
Jap. Open.....	\$1.90	2.10	2.25	2.55
Gale, Funnel.....	\$3.00	3.30	3.60	3.90
Jap. Funnel.....	\$2.45	2.65	2.85	3.30

Masons' Etc.—

Avery-Caldwell Mfg. Co.:	
Steel Brick.....	each \$1.00
Steel Mortar.....	each \$1.25
Cleveland Wire Spring Co.:	
Steel Brick, No. 162.....	each \$0.95
Steel Mortar, No. 158.....	each \$1.25

Hoes— Eye—

Scovill and Oval Pattern.....	60¢ to 10¢ to 60¢ to 10¢ to 10%
Grub, list Feb. 23, 1899.....	70¢ to 10¢ to 75¢ to 10%
D. & H. Scovill.....	33 1/2%

Handled—

NOTE—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or setting at net prices.

Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25	
Ft. Madison Cotton Hoe.....	10¢ to 10%
Ft. Madison Crescent Cultivator Hoe.....	70¢ to 10%
Ft. Madison Mattock Hoes.....	60¢ to 10%
Regular Weight.....	60¢ to 10%
Junior Size.....	60¢ to 10%
Ft. Madison Sprouting Hoe.....	50¢ to 10%
Ft. Madison Dixie Tobacco Hoe.....	75¢ to 10%
Kretzinger's Cut Easy.....	70¢ to 10%
Warren Hoes.....	45¢ to 10%
W. & C. Ivanhoe.....	75¢ to 10%
B. B. 6 in. Cultivator.....	75¢ to 10%
B. B. 6 1/2 in. Cultivator.....	75¢ to 10%
Acme Wedding.....	40¢ to 10%
W. & C. L'ning Shufflo Hoe.....	40¢ to 10%

Hoisting Apparatus—

See Machines, Hoisting.

Holders— Bit—

Angular, 3/4 doz.....	\$24.00.....45% to 10%
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Door—

Bardley's.....	45%
Empire.....	50%
Pullman.....	50%

File and Tool—

Nicholson File Holders and File	
Handles.....	33% to 40%

Fruit Jar—

Triumph Fruit Jar Holder, 3/4 gross.....	\$10.80; 1/2 doz.....\$1.25
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Hones—Razor—

Pike Mfg. Co., Belgian, German and	
Swaty.....	50%

Hooks—Cast Iron—

Bird Cage, Reading.....	40%
Bird Cage, Sargent's List.....	60% to 10%
Celling, Sargent's List, Nos. 29, 32,	
33, 129, 132, 133 and 135.....	50% to 10% to 10%
Clothes Line, Reading List.....	40%
Clothes Line, Sargent's List.....	50% to 10%
Coat and Hat, Sargent's List.....	50% to 10%
Clothes Line, Stowell's.....	70%
Coat and Hat, Reading.....	45% to 20%
Coat and Hat, Stowell's.....	70%
Coat and Hat, Wrightsville.....	65%
Harness, Reading List.....	40%
Harness, Stowell's.....	60%
School House, Stowell's.....	70%

Wire—

Belt.....	80¢ to 10¢ to 2%
Wire C. & H. Hooks.....	75¢ to 10¢ to 75¢ to 10%
Columbian Hdw. Co. Gem.....	70% to 10%
Parker Wire Goods Co., King.....	70% to 10%
Van Wagoner, Coat and Hat.....	70%
Western W. G. Co. Molding.....	75%
Wire Goods Co.:	
Acme.....	60% to 10%
Chief.....	70%
Crown.....	70%
V.....	65%
V Brace.....	75%
Czar Harness.....	50% to 10%

Wrought Iron—

Box, 6 in., per doz., \$1.00; 8 in.,	
\$1.25; 10 in., \$2.50.....	
Cotton.....	doz. \$1.05 to \$1.25
Wrought Staples, Hooks, &c.....	See Wrought Goods.

Miscellaneous—

Hooks, Bench, see Stops, Bench.	
Bush, Light, doz. \$4.75; Medium,	
\$5.35; Heavy, \$6.25.....	
Grass, best, all sizes, per doz. \$1.69	
Grass, common grades, all sizes,	
per doz.....	\$1.30
Whiffletree.....	1b. 5% to 6%

Hooks and Eyes:

Brass.....	60¢ to 50¢ to 60¢ to 10% to 5%
Malleable Iron.....	70¢ to 70¢ to 10%
Covert Mfg. Co. Gate and Scuttle	
Hooks.....	35%
Covert Saddlery Works' Self Locking	
Gate and Door Hooks.....	60%
Ft. Madison Cut-Easy Corn Hooks,	
3/4 doz.....	\$2.25 net

Bench Hooks—See Bench Stops.**Corn Hooks—See Knives, Corn.****Horse Nails—**

See Nails, Horse.

Horseshoes—

See Shoes, Horse.

Hose, Rubber—

Garden Hose, 3/4-inch:	
Competition.....	ft. 5 @ 6¢
3-ply Standard.....	ft. 8 @ 9¢
4-ply Standard.....	ft. 10 @ 11¢
3-ply extra.....	ft. 11 @ 13¢
4-ply extra.....	ft. 13 @ 16¢
Cotton Garden, 3/4-in., coupled:	
Low Grade.....	ft. 8 @ 9¢
Fair Quality.....	ft. 10 @ 11¢

Irons— Sad—

From 4 to 10.....	1b. 3 @ 3 1/2%
B. B. Sad Irons.....	1b. 3 1/2 @ 3 1/2%
Chinese Laundry.....	1b. 3 1/2 @ 5%
Chinese Sad.....	1b. 4 @ 4 1/4%

Mrs. Potts, cents per set:

Low Grade.....	50	55	60	65
Fair Quality.....	68	65	78	75
Tin'd Tops.....	71	68	81	78
New England Pressing.....	1b. 3 1/2 @ 4 1/4%			

Pinking—

Pinking Irons.....	doz. 60¢
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Irons, Soldering**See Coppers.****Jack, Wagon—**

Covert Mfg. Co.:	
Auto Screw.....	30% to 2%
Steel.....	45%
Covert's Saddlery Works:	
Daisy.....	60% to 10%
Victor.....	60%
Leopold.....	30% to 10%
Lane's Steel.....	30% to 10%
Richards' Tiger Steel, No. 130.....	50% to 10%
Smith & Hemenway Co.'s.....	25%

Kettles—

Brass, Spun, Plain.....	20¢ to 25%
Enamelled and Cast Iron—See Ware,	
Hollow.....	

Knives—**Butcher, Kitchen, &c.—**

Foster Bros., Butcher, &c.....	30%
Wilkinson Shear & Cutlery Co.....	50%

Corn—

Withington Acme, 3/4 doz.....	\$2.65;
Dent, 3/2 doz.....	Adj. Serrated, \$2.20;
Serrated, \$2.10; Yankee No. 1, \$1.50;	
Yankee No. 2, \$1.15.....	

Drawing—

Standard List.....	75¢ to 10% to 10%
C. E. Jennings & Co., Nos. 45, 46, 60,	
Jennings & Griffin, Nos. 41, 42.....	60%
Ohio Tool Co.'s.....	70%
Swan's.....	75%
Watrous.....	20% to 25%
L. & L. White.....	20% to 25%

Hay and Straw—

Serrated Edge, per doz.....	\$5.75 to \$6.00
Iwan's Sickle Edge.....	3/4 doz. \$9.50
Iwan's Serrated.....	3/4 doz. \$10.00

Mincing—

Buffalo.....	3/4 gro. \$13.00
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Miscellaneous—

Farriers'.....	doz. \$3.00 to \$3.25
Westenholm's.....	3/4 doz. \$3.00 to \$3.25

Knobs—

Base, 2 1/2-inch, Birch, or Maple,	
Rubber Tip.....	gro. \$1.25 to \$1.50
Carriage, Jap., all sizes.....	gro. 40¢ to 45¢
Door, Mineral.....	doz. 65¢ to 70¢
Door, Por. Jap'd.....	doz. 70¢ to 75¢
Door, Por. Nickel.....	doz. \$2.05 to \$2.15
Bardley's Wood Door, Shutters, &c. 15%	
Picture, Sargent's.....	60% to 10% to 10%

Lacing, Leather—**See Betting, Leather—****Ladders, Store, &c.—**

Lane's Store.....	25%
Myers' Noiseless Store Ladders.....	50%
Richards Mfg. Co.:	
Improved Noiseless, No. 112.....	50%
Climax Shelf, No. 113.....	50%
Trolley, No. 109.....	50%

Ladies, Melting—

L. & G. Mfg. Co. (low list).....	25%
P. & S. W.....	50%
Reading.....	80%
Sargent's.....	50% to 10%

Lanterns— Tubular—

Regular Tubular, No. 0.....	doz. \$4.25 to \$4.50
Lift Tubular, No. 0.....	doz. \$4.75 to \$5.00
Hinge Tubular, No. 0.....	doz. \$4.75 to \$5.00
Other Styles.....	40¢ to 40¢ to 45%

Bull's Eye Police—

No. 1, 2 1/4-inch.....	\$2.75 to \$3.00
No. 2, 3-inch.....	\$3.00 to \$3.25

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....	50%
Stowell's Badger, Cast Iron.....	50%

Latches— Thumb—

Roggin's Latches, with screw.....	doz. 35¢ to 40¢
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Door—

Cronk & Carrier Mfg. Co., No. 101,	
Cronk & Carrier Mfg. Co., Latch,	
Hasp and Staples.....	50%
Richards' Bull Dog, Heavy.....	50%
125.....	50% to 5%
Richards' Trump, No. 127.....	\$1.50

Leaders, Cattle—

Small.....	doz. 50¢; large, 60¢
Covert Mfg. Co., Cotton and Hemp.....	45%

Lifters, Transom—

R. & E.....	33 1/4%
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Lines—

Wire Clothes, Nos. 18.....	19	20
100 feet.....	\$2.25	2.00
75 feet.....	\$1.75	1.35
50 feet.....	\$1.15	1.10

Sansom Cordage Works:

Solid Braided Chalk, Nos. 0 to 3, 40%	
Silver Lake Braided Chalk, No. 0,	
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No.	
3, \$7.50.....	3¢ to 20%
Masons' Lines, Shade Cord, &c.:	
White Cotton, No. 3 1/2, \$1.50; No. 4,	

22.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,

\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;	
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;	
No. 4 1/2, \$4.50.....	20%

Tent and Awning Lines: No. 5,

White Cotton, \$7.50; Drab Cotton,	
\$8.50.....	20%
Clothes Lines, White Cotton; 50 ft.,	
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75	
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;	
100 ft., \$5.25.....	20%

Anniston Waterproof Clothes, 50 ft.,

3/4 gro. \$24.00; Gilt Edge, \$22.00; Air	
Line, \$22.00; Acme, \$17.00; Alabama,	
\$15.00; Empire, \$14.00; Advance,	
\$13.50; Oriole, \$20.00; Albemarle,	
\$13.50; Eclipse, \$12.50; Chicago,	
\$11.00; Standard, \$10.00; Columbia,	
\$8.50; Allston, \$12.50; Calhoun, \$11.00.	

Locks— Cabinet—

Cabinet Locks.....	33 1/2% to 33 1/2% to 47 1/2%
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Door Locks, Latches, &c.—

NOTE—Net Prices are very often made on these goods.

Reading Hardware Co.....	40%
R. & E. Mfg. Co.....	40%
Sargent & Co.....	40% to 10%
Stowell's Steel Door Latches.....	50%

Elevator—

Stowell's.....	30%
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Padlocks—

Wrought Iron.....	75¢ to 10¢ to 80¢ to 65%
Net prices are general.	
R. & E. Mfg. Co. Wrought Steel and	
Brass.....	75% to 10%

Sash, &c.—

Ives' Patent.....	62 1/2%
Bronze and Brass.....	62 1/2%
Crescent.....	50% to 10%
Iron.....	62 1/2%
Window Ventilating.....	60%
Robison Patent Ventilating Sash	
Lock.....	40%
Wrought Bronze and Brass.....	55%
Wrought Steel.....	55%
Pullman Patent Ventilating Lock.....	25%
Reading.....	40%

Machines—Boring—

Com. Up'r, without Augers.....	\$2.00
Com. Ang'r, without Augers.....	\$2.25
Swan's Improved.....	40% to 10%
Jennings' Nos. 1 and 4.....	35% to 5%
Millers' Falls.....	5.75
Snell's, Rice's Pat. 2.50.....	2.75

Corking—

Reisinger Invinible Hand Power.....	3/4 doz. \$48.00
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Fence—

Williams' Fence Machines.....	each \$5.50
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Hoisting—

Moore's Anti-Friction Differential	
Pulley Block.....	30%
Moore's Hand Hoist, with Lock	
Brake.....	20%

Ice Cutting—

Chandler's.....	12 1/2%
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Washing—

Com. Upr't, without Augers.	\$2.00
Com. Ang'l'r, without Augers.	\$2.25

Slaters Felt (roll 500 sq. ft.) .75¢
R. H. M. Stone Surfaced Roofing
(roll 110 sq. ft.) .75¢

Sand and Emery
Flint Paper and Cloth .60¢@1.00¢
Garnet Paper and Cloth .25¢
Emery Paper and Cloth .50¢@1.00¢

Parers—Apple—
Advance doz. \$4.00
Hawkin doz. \$4.00
Bonanza Improved each \$6.50
Dandy doz. \$4.00
Eureka Improved each \$20.00
Family Bay State doz. \$15.00
Improved Bay State doz. \$36.00
Little Star doz. \$5.00
New Lightning doz. \$5.00
Reading 72 doz. \$3.25
Reading 78 doz. \$6.25
Rocking Table doz. \$6.20
Turn Table '98 doz. \$6.00
White Mountain doz. \$5.00

Potato—
Saratoga doz. \$7.00
White Mountain doz. \$6.00

Picks and Mattocks—
List Feb. 23, 1899 75¢
Cronk's Handled Garden Mattock
doz., \$6.40 33½¢

Pinking Irons—
See Irons, Pinking.

Pins, Escutcheon—
Brass 60¢@1.00¢
Iron, List Nov. 11, '85 60¢@1.00¢

Pipe, Cast Iron Soil—
Carload lots.
Standard, 2-6 in. 60¢
Extra Heavy, 2-6 in. 70¢
Fittings 75¢

Pipe, Merchant—
Consumers, Carloads.
Steel. Iron.
Bk. Galv. Bk. Galv.
½ & ¼ in. 55¢ 68½¢ 52½¢
¾ & ½ in. 75¢ 63 72½¢ 60½¢
¾ to 6 in. 79 69 77 67
7 to 12 in. 74 69 72 65½¢

Pipe, Vitriol Sewer—
Carload lots.
Standard Pipe and Fittings, 2
to 24 in. 68¢
New England 71¢
New York and New Jersey 71¢
Maryland, Delaware, E. Pa. 75¢
West. Pa. and West Va. 77¢
Virginia 76¢
Ohio, Michigan and Ky. 77¢
Indiana 77¢
NOTE.—Carload lots are generally de-
livered.

Pipe, Stove—
Edwards' Nested Stove Pipe:
C. L. L. C. L.
5 in., per 100 joints \$7.00 \$8.00
6 in., per 100 joints 7.50 8.50
7 in., per 100 joints 8.50 9.50

Planes and Plane Irons—
Wood Planes—
Bench, first qual. 40¢@1.00¢
Bench, second qual. 50¢@1.00¢
Molding 31½¢@1.00¢
Bailey's (Stanley R. & L. Co.) 40¢
Chapin-Stephens Co.:
Bench, First Quality 40¢@1.00¢
Bench, Second Quality 50¢@1.00¢
Molding 31½¢@1.00¢
Toy and German 40¢@1.00¢
Chapin's 60¢
Ohio Tool Co.:
Bench, First Quality 40¢@1.00¢
Bench, Second Quality 50¢@1.00¢
Molding 31½¢@1.00¢
Adjustable Wood Bottom 60¢
Union 60¢

Iron Planes—
Bailey's (Stanley R. & L. Co.) 40¢
Chapin's Iron Planes 50¢@1.00¢
Miscellaneous Planes (Stanley R.
& L. Co.) 35¢
Ohio Tool Co.'s Iron Planes 60¢
Sargent's 60¢@1.00¢
Union 60¢

Plane Irons—
Wood Bench Plane Irons.
Buck Bros. 30¢
Chapin-Stephens Co. 30¢@1.00¢
Ohio Tool Co. 30¢
Stanley R. & L. Co. 35¢
Union 50¢
L. & J. White 30¢@1.00¢

Planters, Corn, Hand—
Kohler's Eclipse doz. \$2.50

Plates—
Felloe lb. 8¢@14¢
Self-Sealing Pie Plates (S. S. &
Co.) doz. \$2.00 50¢

Pliers and Nippers—
Button Pliers 75¢@1.00¢
Gas Burner, per doz., 5 in., \$1.25
@ \$1.30; 6 in., \$1.45 @ \$1.50.
Gas Pipe 7 8 10 12-in.
\$2.00 \$2.25 \$3.00 \$3.75

Acme Nippers 50¢@5¢
Cronk & Carrier Mfg. Co.:
American Button 75¢@1.00¢
Cronk's 60¢
Stub's Pattern 33½¢
Combination and others 33½¢
Heller's Farriers' Nippers, Pincers
and Tools 40¢@1.00¢@1.00¢
The Nettleton Mfg. Co. Reversible
Cutting Nippers 50¢
P. S. & W. Finners' Cutting Nip-
pers 40¢
Swedish Side, End and Diagonal Cut-
ting Pliers 50¢
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds 40¢

Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels 30¢@1.00¢
Chapin's Imp. Brass Cor. 100' 40' 10' 10' 10'
Pocket Levels 30¢@1.00¢
Diston's Plumbs and Levels 75¢

Diston's Pocket Levels 14¢
C. E. Jennings & Co.'s Iron 30¢
C. E. Jennings & Co.'s Iron, Adjust-
able 10¢@1.00¢
Stanley R. & L. Co. 45¢
Stanley's Duplex 35¢
Woods' Extension 35¢

Poachers, Egg—
Buffalo Steam Egg Poachers, doz.,
No. 1, \$6.00; No. 2, \$9.00; No. 3,
\$9.00; No. 4, \$12.00 50¢

Points, Glaziers—
Bulk and 1-lb. papers, lb. 8½¢@9¢
½-lb. papers lb. 9¢@9½¢
½-lb. papers lb. 9½¢@10½¢

Pokes, Animal—
Ft. Madison Hawkeye doz. \$3.25
Ft. Madison Western doz. \$4.00

Police Goods—
Manufacturers' Lists 25¢@25¢5¢
Tower's 25¢

Polish—Metal, Etc—
Glasbrite, No. 2, 5 lb can (powder),
each, \$1.25; doz., \$12.00; No. 2, 10 lb
can (cake), each, \$2.50; doz., \$24.00.
Prestoline Liquid, No. 1 (½ pt.),
doz., \$3.00; No. 2 (1 qt.), \$9.72 40¢
Prestoline Paste 40¢
George William Hoffman:
U. S. Metal Polish Paste, 3 oz.
boxes, doz. \$2.50; 1 lb boxes,
doz. \$2.25.
U. S. Liquid, 8 oz. cans, doz.,
\$1.25; 16 oz. cans, doz., \$2.50.
Barkkeepers' Friend Metal Polish,
doz., \$1.75; 16 oz. cans, doz., \$3.50.
Wynn's White Silk, ½ pt. cans, doz.
doz. \$2.00

Stove—
Black Eagle Benzine Paste, 5 lb cans,
doz. \$1.00
Black Eagle, Liquid, ½ pt. cans,
doz. \$1.00
Black Jack Paste, ½ lb cans, doz. \$1.00
Black Kid Paste, 5 lb cans, each, \$0.65
Ladd's Black Beauty Liquid, per
100 tins \$6.75
Joseph Dixon's, ½ gr. \$5.75 10¢
Dixon's Plumbago 10¢
Firebrand's 10¢
Gem, ½ gr. \$4.50 10¢
Japanese 10¢
Jet Black 10¢
Peerless Iron Enamel, 10 oz. cans,
doz. \$1.50

Poppers, Corn—
1 qt., Square gro. \$9.00
1 qt., Round gro. \$10.00
1½ qt., Square gro. \$11.00
2 qt., Square gro. \$13.00

**Post Hole and Tree Au-
gers and Diggers—**
See also Diggers, Post Hole, &c.
Posts, Steel—
Steel Hinge Posts, each, 5 ft., 42¢;
6 ft., 46¢; 7½ ft., 48¢.
Steel Hitching Posts each \$1.30

Potato Parers—
See Parers, Potato.
Pots, Glue—
Enamelled 40¢
Tinned 35¢

Powder—
In Canisters:
Duck, 1 lb. each 45¢
Fine Sporting, 1 lb. each 75¢
Rifle, ½ lb. each 15¢
Rifle, 1 lb. each 25¢
In Kegs:
12½-lb. kegs \$3.50
25-lb. kegs \$4.50
King's Semi-Smokeless:
Keg (25 lb bulk) \$6.50
Half Keg (12½ lb bulk) \$3.50
Quarter Keg (6¼ lb bulk) \$1.90
Case 24 (1 lb cans bulk) \$8.50
Half case (1 lb cans bulk) \$4.50
King's Smokeless:
Shot Gun Rifle.
Keg (25 lb bulk) \$12.00 \$15.00
Half Keg (12½ lb bulk) 6.25 7.75
Quarter Keg (6¼ lb bulk) 2.25 4.00
Case 24 (1 lb cans bulk) 14.00 17.00
Half case 12 (1 lb c. bk.) 7.25 8.75
Robin Hood Sm'less Shot Gun 50¢@20¢

Presses—
Fruit and Jelly—
Enterprise Mfg. Co. 20¢@25¢
Seal Presses—
Morrill's No. 1, ½ doz., \$20.00 70¢
Pruning Hooks and Shears
See Shears.
Pullers, Cork—
Invincible Cork Puller \$21.00

Pullers, Nail—
Cyclops 50¢
Miller's Falls, No. 3, ½ doz., \$12.00 33½¢@10¢
Morrill's No. 1, Nail Puller, ½ doz. \$20.00 50¢
Pearson No. 1, Cyclone Spike Puller 50¢
each \$30.00, doz. \$9.00 40¢@10¢
Scranton Case Lots:
No. 2H (large) \$5.50
No. 3B (small) \$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots doz. \$6.00
Diamond B, No. 3, case lots doz. \$5.50
Giant No. 1, ½ doz. \$18; No. 2,
doz. \$15 33½¢
Staple Pullers 70¢
Parrot Tack and Stub Puller, ½ doz.
75¢; 1 doz., \$1.00

Pulleys, Single Wheel—
Inch 1½ 1¾ 2 3
Awning or Tackle,
doz. \$0.30 .35 .60 1.05
Hay Fork, Strivel or Solid Eye,
doz., 4 in., \$1.25; 5 in., \$1.55

Inch 2 2½ 2¾
Hot House, doz. \$0.65 .85 1.20
Inch 1½ 1¾ 2
Screw, doz. \$0.16 .19 .30
Inch 1¾ 2 2½
Side, doz. \$0.25 .40 .55 .60
Inch 1½ 1¾ 2 2½

Sash Pulleys—
Common Frame; Square or
Round End, per doz, 1¾ and
2 in. 16¢@19¢
Auger Mortise, no Face Plate,
per doz., 1¾ and 2 in. 16¢@19¢
Acme 1¾ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in. 19¢

Pumps—
Cistern 60¢@1.00¢
Pitcher Spout 80¢@1.00¢
Wood Pumps, Tubing, &c. 45¢@50¢
Barnes Dbl. Acting (low list) 50¢
Barnes' Pitcher Spout 75¢@1.00¢
Contractors' Rubber Diaphragm No.
2, B. & L. Block Co. \$16.00
Daisy Spray Pump doz. \$6.75
Plint & Walling's, Fast Mail Hand,
(low list) 55¢
Plint & Walling's, Fast Mail (low
list) 55¢@55¢
Plint & Walling's Tight Top Pitcher 80¢
National Specialty Mfg. Co., Measur-
ing, \$6.00 30¢
Mechanical Sprayer \$6.00
Myers' Pumps (low list) 50¢
Myers' Power Pumps 50¢
Myers' Spray Pumps 50¢@1.00¢

Pump Leathers—
Plunger and Lower Valve—Per
gro.:
Inch 2 2½ 2¾ 2¾
Inch \$2.20 2.50 2.75 3.00
Inch 3 3½ 3¾ 4
Inch \$3.30 3.60 3.85 4.10 4.40
Plunger Cup Leathers—Per 100:
Inch 2½ 3 3½ 4
Inch \$2.75 3.85 5.00 6.00

Punches—
Saddlers' or Drive, good doz. 50¢@75¢
Spring, single tube, good qual-
ity \$1.75@2.00
Revolving (4 tubes) doz. \$3.50@3.75
Bemis & Call Co.'s Cast St'l Drive 50¢
Bemis & Call Co.'s Check 55¢
Morrill's Noa. 1AA, 1A, 1B, 1C,
15.00 50¢
Hercules, 1 die, each \$5.00 50¢
Niagara Hollow Punches 40¢
Pint Screw B. & K. Mfg. Co. 50¢
Tinner's Hollow P., S. & W. Co. 40¢
Tinner's Solid P., S. & W. Co. 40¢
doz., \$1.41 60¢

Rail—Barn Door, &c.—
Sliding Door, Painted Iron 2½¢@2¾¢
Sliding Door, Wrought Brass,
1½ in. lb., 36¢ 30¢
Albitt Mfg. Co.:
No. 1, Reliable Hgr. Track, ½ ft. 5½¢
No. 2, Reliable Hgr. Track, ½ ft. 7¢
Cronk's:
Double Braced Steel Rail, ½ ft. 2¼¢
Q. N. T. Rail 2½¢
Griffin's:
xxx, ½ 100 ft., 1 x 3-16 in., \$3.00;
1¼ x 3-16 in., 3.50;
Hinged Hanger, ½ 100 ft., 1 x 3-16
in., \$3.10; 1¼ x 3-16 in., \$3.60.

Rollers—
Hinged Track, ½ 100 ft., 1 in., \$3.40;
1½ in., \$4.10.
O. N. T., ½ 100 ft., 1 in., \$2.75; 1¼
in., \$3.50; 1½ in., \$4.00.
Standard, 1¼ in., ½ 100 ft. \$4.00
Lawrence Bros.:
½ 100 ft. No. 201, \$4.00; No. 202, \$4.00
New York, 1 x 3-16 in., ½ 100 ft. \$2.75
McKinnon's:
Hinged Hanger Rail, ½ ft., 11¢ 50¢
None Better ½ ft. 3¼¢
Standard ½ ft. 4¢
Myers' Stayon Track 60¢@1.00¢
Richards' Mfg. Co.:
Common 1 x 2-6 in., \$2.25; 1¼ x
3-16, \$2.50; 1¼ x 3-16, \$2.75;
Special Hinged Hanger Rail 80¢@1.00¢
Lag Screw Rail, No. 65 50¢
Gauge Trolley Track, ½ ft., No. 31,
9¢; No. 32, 14¢; No. 33, 20¢
Safety Door Hanger Co.'s Storm
King Safety 60¢
Safety Door Hanger Co.'s U. S.
Standard 60¢
Stowell's:
Cast Rail ½ ft. 1¾¢
Steel Rail, Plain 25¢
Wrought Bracket, 1-3-16 in. ½ ft. 3¢
Wrought Bracket, 1-3-16 x 5-16 ½ ft. 7¢
Swett's Hylo, ½ ft. 11¢ 60¢
P. L. B. Steel Rail ½ 100 ft. \$3.00
No. 0, 1 x 3-16 ½ 100 ft. \$2.75

Ropes—
Manila, 7-16 in. diam. and larger:
Pure lb. 12½¢
Sisal, 7-16 in. diam. and larger:
Pure lb. 10¢
Sisal, 7-16 in. diam. and larger:
No. 2 quality lb. 8¢
Sisal, Hay, Hide and Bale
Ropes, Medium and Coarse:
Mixed lb. 8¢
Pure lb. 10¢
Sisal, Tarred, Medium Lath
Yarn, Coarse and Untarred:
Mixed lb. 8¢
Pure lb. 10¢
Best, ¼-in. and larger, 16½¢@18¢
Medium, ¼-in. and larger 15½¢@16½¢
Common, ¼-in. and larger 10¢
In coils, ½¢ advance.

Ropes—
Jute Rope:
Thread No. 1, ¼-in. & up, lb. 6½¢
Thread No. 2, ¼-in. & up, lb. 5½¢
Old Colony Manila Transmission
Rope lb. 17½¢

Wire Rope—
Galvanized 37¢@41½¢
Plain 35¢@41½¢

Anticlog Lawn, ½ doz. \$4.00
Malleable Garden 70¢@1.00¢
Kohler's:
Lawn Queen, 20-tooth doz. \$3.45
Lawn Queen, 24-tooth doz. \$3.60
Paragon, 20-tooth doz. \$2.75
Paragon, 24-tooth doz. \$3.00
Steel Garden, 14-tooth doz. \$2.40
Malleable Garden, 14-tooth doz. \$2.40
Weldless Steel Garden \$1.75@2.00

Rasps, Horse—
Diston's 75¢
Heller Bros. 70¢@1.00¢
McCaffrey's American Std. 60¢@1.00¢
New Nicholson 70¢@1.00¢
See also Files.

Razors—
Boras-1 C 60¢
Fox Razors, No. 42 doz. \$20.00
Fox Razors, No. 44 doz. \$20.00
Fox Razors, No. 82, Platina 10¢
Red Devil doz. \$25.00
Silverstein:
Carbo Magnetic \$18.00
Griffon, No. 65 \$15.00
Griffon, No. 00 \$12.00
All other Razors 40¢

Safety Razors—
Silverstein 90¢

Reels, Fishing—
Hendryx:
M. G. A. 6 B. 6 M. 9 M. 16,
Q. 16 A. 16 B. 16 4000 Rubber,
Populo, Nickeled Populo 20¢
Aluminum, German Silv., Bronze, 25¢
1240 N. 124 N. 20¢
3004 N. 06 N. 6 RM. G. 9 25¢
4 N. 6 PN. 24 N. 26 PN. 20¢
2304 P 33½¢
2304 PN 33½¢
0924 N 33½¢
02084 N 33½¢
020904 PN 33½¢
802 N 33½¢
560 PN, 5009 N. 974 PN 25¢
Competitor, 102 P. 102 PN, 202 P.
202 PN, 102 PR, 202 PR 20¢
304 P, 304 PN, 0304 P, 0304 PN 33½¢

Registers—List July 1, 1903.
Japanned, Electroplated and
Bronzed 70¢@1.00¢
Bronzed 75¢

Revolvers—
Single Action 95¢@1.00
Double Action, except 44 cal. \$1.85
Double Action, 44 caliber \$2.00
Automatic \$3.45
Hammerless \$4.00

Riddles, Hardware Grade
16 in. per doz. \$2.25@2.50
17 in. per doz. \$2.50@2.75
18 in. per doz. \$2.75@3.00

Rings and Ringers—
Bull Rings—
Steel \$0.70 0.75 0.80 doz.
Copper \$1.00 1.15 1.40 doz.
Rea's Improved Self-Piercing, Cop-
per, 2 in., ½ doz., \$1.25; 2½ in.,
1½ doz., \$1.75.
Hog Rings and Ringers—
Hill's Rings, gro. boxes \$4.00@4.50
Hill's Ringers, Gray Iron doz. 50¢@55¢
Hill's Ringers, Malleable Iron doz. 70¢@75¢
Blair's Rings per doz. \$4.75@5.25
Blair's Ringers, per doz. \$0.60@.65
Brown's Rings per doz. \$3.00@5.50
Brown's Ringers, per doz. \$0.60@.65

Rivets and Burrs—
Copper 50¢@50¢@1.00¢
Iron or Steel 75¢@75¢@1.00¢

Rollers—
Acme, Stowell's Anti-Friction 50¢
Barn Door, Sargent's list 60¢
Cronk's Stay No. 65, \$0.90; No.
50 \$1.00
Cronk's Brinkerhoff No. 55, \$0.60;
No. 56 \$0.84
Lane's Stay 40¢
Richards' Stay:
Handy Adj. and Reversible No. 33, 75¢
O. K. Adj. and Reversible No. 58, 50¢
Lag Screw, Nos. 55 and 57 50¢
Underwriters', Nos. 59, 60 50¢
Favorite, No. 54 60¢
Stowell's Barn Door Stay, ½ doz. \$1.00
Swett's Anti-Friction 50¢
Screw and Spike Stay 60¢
Hinge Adjustable Stay doz. 90¢

Rope—
Manila, 7-16 in. diam. and larger:
Pure lb. 12½¢
Sisal, 7-16 in. diam. and larger:
Pure lb. 10¢
Sisal, 7-16 in. diam. and larger:
No. 2 quality lb. 8¢
Sisal, Hay, Hide and Bale
Ropes, Medium and Coarse:
Mixed lb. 8¢
Pure lb. 10¢
Sisal, Tarred, Medium Lath
Yarn, Coarse and Untarred:
Mixed lb. 8¢
Pure lb. 10¢
Best, ¼-in. and larger, 16½¢@18¢
Medium, ¼-in. and larger 15½¢@16½¢
Common, ¼-in. and larger 10¢
In coils, ½¢ advance.

Rope—
Jute Rope:
Thread No. 1, ¼-in. & up, lb. 6½¢
Thread No. 2, ¼-in. & up, lb. 5½¢
Old Colony Manila Transmission
Rope lb. 17½¢

Wire Rope—
Galvanized 37¢@41½¢
Plain 35¢@41½¢

Rakes—
NOTE.—Manufacturers are
selling from the list of September
1, 1904, but many jobbers are still
using list of August 1, 1899, or
selling at net prices.
Fort Madison Red Head Lawn \$3.25
Fort Madison Blue Head Lawn \$3.70
Jackson Lawn, 29 and 30 teeth,
doz., net \$4.25
Cronk's:
New Champion Garden, ½ doz. 12
teeth, \$15.00; 14, \$16.50; 16, \$18.00 75¢
Victor Garden, ½ doz. 12 teeth,
\$15.00; 14, \$16.50; 16, \$18.00 80¢
Queen City Lawn, ½ doz., 20 teeth,
\$3.45; 24, \$3.65 net.

India Oil Stones (entire list)...33%
 Quickcut Emery and Corundum Oil
 Stone, Double Grit...33%
 Quickcut Emery and Corundum Oil
 Stone, Double Grit...33%
 Quickcut Emery Rubbing Bricks...33%
 Hindostan No. 1, 1 1/2 lb. 8¢
 Hindostan No. 1, Small, 1/2 lb. 8¢
 Axe Stones (all kinds)...2 1/2¢
 Turkey Oil Stones, Extra, 5 to
 8 in. 10¢
 Queer Creek Stones, 4 to 8 in. 20¢
 Queer Creek Slips...40¢
 Sand Stones...6¢

Scythe Stones—

Chicago Wheel & Mfg. Co.:
 Gem Corundum, 10 in., \$8.00
 gro., 12 in., \$10.80.
 Norton Emery Scythe Stones:
 Less than gross lots...gro. \$9.00
 One gross or more...gro. \$7.20
 Lots of 10 gross or more...gro. \$6.00

Pike Mfg. Co., 1901 list:

Black Diamond S. S. gro. \$12.00
 Lamolite S. S. gro. \$11.00
 White Mountain S. S. gro. \$9.00
 Green Mountain S. S. gro. \$8.00
 Extra Indian Pond S. S. gro. \$7.50
 No. 1 Indian Pond S. S. gro. \$7.00
 No. 2 Indian Pond S. S. gro. \$4.50
 Leader Red End S. S. gro. \$4.50
 Quick Cut Emery...gro. \$10.00
 Pure Corundum...gro. \$18.00
 Crescent...gro. \$7.00
 Emery Scythe Rifles, 2 Coat, \$8
 Emery Scythe Rifles, 3 Coat, \$10
 Emery Scythe Rifles, 4 Coat, \$12
 Balance of 1904 list 33 1/2%

Stoppers, Bottle—

Victor Bottle Stoppers...gro. \$9.00

Stops—Bench—

Millers Falls...15¢/10¢
 Morrill's, No. 2, No. 1, \$10.00...50¢
 Morrill's, No. 2, \$12.50...50¢

Door—

Chapin-Stephens Co...60¢/60¢/10¢

Plane—

Chapin-Stephens Co...20%

Straps—Box—

Cary's Universal, case lots...25¢/20%

Hame—

Covert's Saddlery Works...60¢/10¢

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60¢/60¢/10¢

Socket...doz. \$1.40

Excelsior Stretcher and Tack Ham-

mer Combined, doz. \$6.00...20%

Stuffers, Sausage—

Enterprise Mfg. Co...25¢/5¢/7 1/2%

National Specialty Co., list Jan. 1,

1902...30¢/5¢

Sweepers, Carpet—

National Sweeper Co.: doz.

Louis XV, Roller Bearing, Gold

Plated...\$120.00

Hepplewhite, Roller Bearing, Sil-

ver Plated...\$72.00

Sheraton, Roller Bearing, N'kel...\$60.00

Ye Mission, Roller Bearing, Ox-

idized Coppered...\$36.00

Transparent, Roller Bearing, Plate

Glass top, Nickel...\$36.00

National Queen, Roller Bearing,

Fancy Venetian...\$27.00

Loyal, Roller Bearing, Venetian

Nickel...\$25.00

Triple Medal, Roller Bearing,

Nickel...\$24.00

Marion, Roller Bearing, N'kel...\$24.00

Marion Queen, Roller Bearing,

Nickel...\$24.00

Monarch, Roller Bearing, N'kel...\$22.00

Monarch, Roller Bearing, Jap...\$20.00

Perpetual, Regular B'rs, Jap...\$18.00

Monarch Extra (17 in. case), Roller

Bearing, Nickel...\$36.00

Monarch Extra (17 in. case), Roller

Bearing, Japanned...\$33.00

Auditorium (26 in. case), Roller

Bearing, Nickel...\$25.00

Mammoth (30 in. case), Roller

Bearing, Nickel...\$60.00

NOTE—Rebates: 50¢ per dozen on

three-dozen lots; \$1 per dozen on five-

dozen lots; \$3 per dozen on ten-dozen lots;

\$2.50 per dozen on twenty-five-dozen lots.

Streator Metal Stamping Co.:

Model E, Sanitaire...doz. \$25.00

Model A, Sterling...doz. \$25.00

Model B, Sterling, Nickel...doz. \$25.00

Model B, Sterling, Japanned...doz. \$21.00

Model C, Sterling...doz. \$21.50

Model D, Sterling...doz. \$19.50

Tacks, Finishing Nails,

&c.

New List, May 1, 1905.

American Carpet Tacks, 90¢/37 1/2%

American Cut Tacks...90¢/37 1/2%

Suedes Cut Tacks...90¢/37 1/2%

Suedes Upholsterers' Tacks...90¢/50%

Gimp Tacks...90¢/50%

Lace Tacks...90¢/50%

Trimmers' Tacks...90¢/37 1/2%

Looking Glass Tacks...65%

Bill Posters' and Railroad Tacks...90¢/50%

Hungarian Nails...65%

Finishing Nails...70%

Trunk and Clout Nails...80¢/5%

NOTE—The above prices are for

Standard Weights. An extra 5% is given

on Medium Weights, and an extra 10¢/5%

is given on light weights.

Miscellaneous—

Double Pointed Tacks...90¢/6 or 7 tens

Steel Wire Brads, R. & E. Mfg. Co.'s

list...50¢/10¢/60%

See also Nails, Wire.

Tanks, Oil—

Emerald, S. S. & Co...30-gal. \$3.40

Emerald, S. S. & Co...60-gal. \$3.25

Queen City, S. S. & Co...30-gal. \$3.65

Queen City, S. S. & Co...60-gal. \$4.50

Tapes, Measuring—

American Asses' Skin...50¢—2

Patent Leather...25¢/30¢/5%

Steel...33 1/3-55%

Chesterman's...25¢/25¢/5%

Eddy Asses' Skin...40¢/10¢/50%

Eddy Patent Leather...25¢/50¢/5%

Eddy Steel...40¢/10¢/10%

Keuffel & Esser Co.:

Favorite, Ass Skin...40¢/10¢/50%

Favorite, Duck and Leather...25¢/50¢/5%

Metallic and Steel, lower list...35¢/35¢/5%

Pocket...35¢/35¢/5%

Lufkin's:

Asses' Skin...40¢/10¢/50%

Metallic...30¢/30¢/5%

Patent Bend, Leather...25¢/50¢/5%

Pocket...40¢/40¢/5%

Steel...33 1/3-35%

Teeth, Harrow—

Steel Harrow Teeth, plain or

headed, 1/2-inch and larger...per 100 lbs. \$2.75 to \$3.00

Thermometers—

Tin Case...80¢/10¢/80¢/10¢/5%

Ties, Bale—Steel Wire—

Single Loop...80¢/2 1/2%

Monitor, Cross Head, &c...70%

Brick Ties—

Niagara Brick Ties...25¢/10%

Tinners' Shears, &c.—

See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, sold

very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works...60¢/10%

Tire Benders, Upsetters, &c.

See Benders and Upsetters, Tire.

Tools—Coopers'—

L. & I. J. White...20¢/20¢/5%

Hay—

Myers' Hay Tools...50%

Stowell's Hay Carriers...50%

Stowell's Hay Forks...50%

Stowell's Fork Pulleys...50%

Miniature—

Smith & Hemenway Co.'s...25%

Saw—

Atkins' Cross Cut Saw Tools...40%

Simonds' Improved...33 1/3%

Simonds' Crescent...25%

Ship—

L. & I. J. White...25%

Transom Lifters—

See Lifters, Transom.

Traps—Fly—

Balloon, Globe or Acme, doz.

\$1.15 to \$1.25; gro. \$1.15 to \$1.20

Harper, Champion or Paragon,

doz. \$1.25 to \$1.40; gro. \$1.30 to \$1.50

Game—

Imitation Oneida...75¢/75¢/5%

Newhouse...40¢/45¢/5%

Hawley & Norton...10¢/10¢/5%

Victor...10¢/10¢/5%

Oneida Community Jump...50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes

8 1/2"/3 1/2" doz. \$5.00 to \$9.00

Mouse, Round or Square Wire—

doz. \$5.00 to \$9.00

Marty French Rat and Mouse Traps

(Genuine):

No. 1, Rat, each \$1.21; doz. \$13.25

No. 3, Rat, doz. \$6.50; case of 50

No. 3 1/2, Rat, doz. \$5.25; case of 72

No. 4, Mouse, doz. \$3.85; case of 150

No. 5, Mouse, doz. \$3.00; case of 150

Trimmers, Spoke—

Wood's E. I...50%

Trowels—

Disston Brick and Pointing...30%

Disston Plastering...25%

Disston "Standard Brand" and Gar-

den Trowels...35%

Kohler's Steel Garden Trowels, 5 in.

gro. \$1.80

Never-Break Steel Garden Trowels,

gro. \$6.00

Rose Brick and Plastering...25¢/5%

Woodrough & McParlin, Plastering...25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:

New York Pattern...50¢/10%

Western Pattern...50¢/10%

Handy Trucks...\$10.00

Grocery...doz. \$15.00

Daisy Store Trucks, Improved Pat-

tern...doz. \$18.50

McKinney Trucks...each \$10.00

Model Store Trucks...doz. \$18.50

Tubs, Wash—No. 1 2 3

Galvanized, per doz. \$4.25 4 1/2 5 25

Galvanized Wash Tubs (S. S. & Co.)

No. 1 2 3 10 20 30

Per doz., net. \$5.70 6.30 7.20 8.40 9.10

Twine, Miscellaneous—

Flax Twine: BC. B.

No. 9, 1/4 and 1/2-lb. Balls, 22¢/2 1/2%

No. 12, 1/4 and 1/2-lb. Balls, 18¢/20%

No. 15, 1/4 and 1/2-lb. Balls, 16¢/18%

No. 21, 1/4 and 1/2-lb. Balls, 16¢/18%

No. 36, 1/4 and 1/2-lb. Balls, 15¢/17%

Chalk Line, Cotton 1 1/2-lb.

Balls...25¢/30¢

Cotton Mops, 6, 9, 12 and 15 lb.

to doz...10¢/18%

Cotton Wrapping, 5 Balls to lb.

according to quality...14¢/20¢

American 2-Ply Hemp, 1/4

1/2-lb. Balls...13¢/11%

American 3-Ply Hemp, 1-lb.

Balls...13¢/11%

India 2-Ply Hemp, 1/4 and 1/2-lb.

Balls (Spring Twine)...34¢

India 3-Ply Hemp, 1-lb. Balls...34¢

India 3-Ply Hemp, 1 1/2-lb. Balls...

7¢/8¢

2, 3, 4 and 5-Ply Jute, 1/2-lb.

Balls...9¢/10%

Mason Line, Linen, 1/2-lb. Bls...4¢

No. 2 1/2 Mattress, 1/4 and 1/2-lb.

Balls...37¢

Wool, 3 to 6 ply...B 6¢; A 6 1/2¢

Vises—

Solid Box...60%

Parallel—

Athol Machine Co.:

Simpson's Adjustable...40%

Standard...40%

Amateur...25%

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